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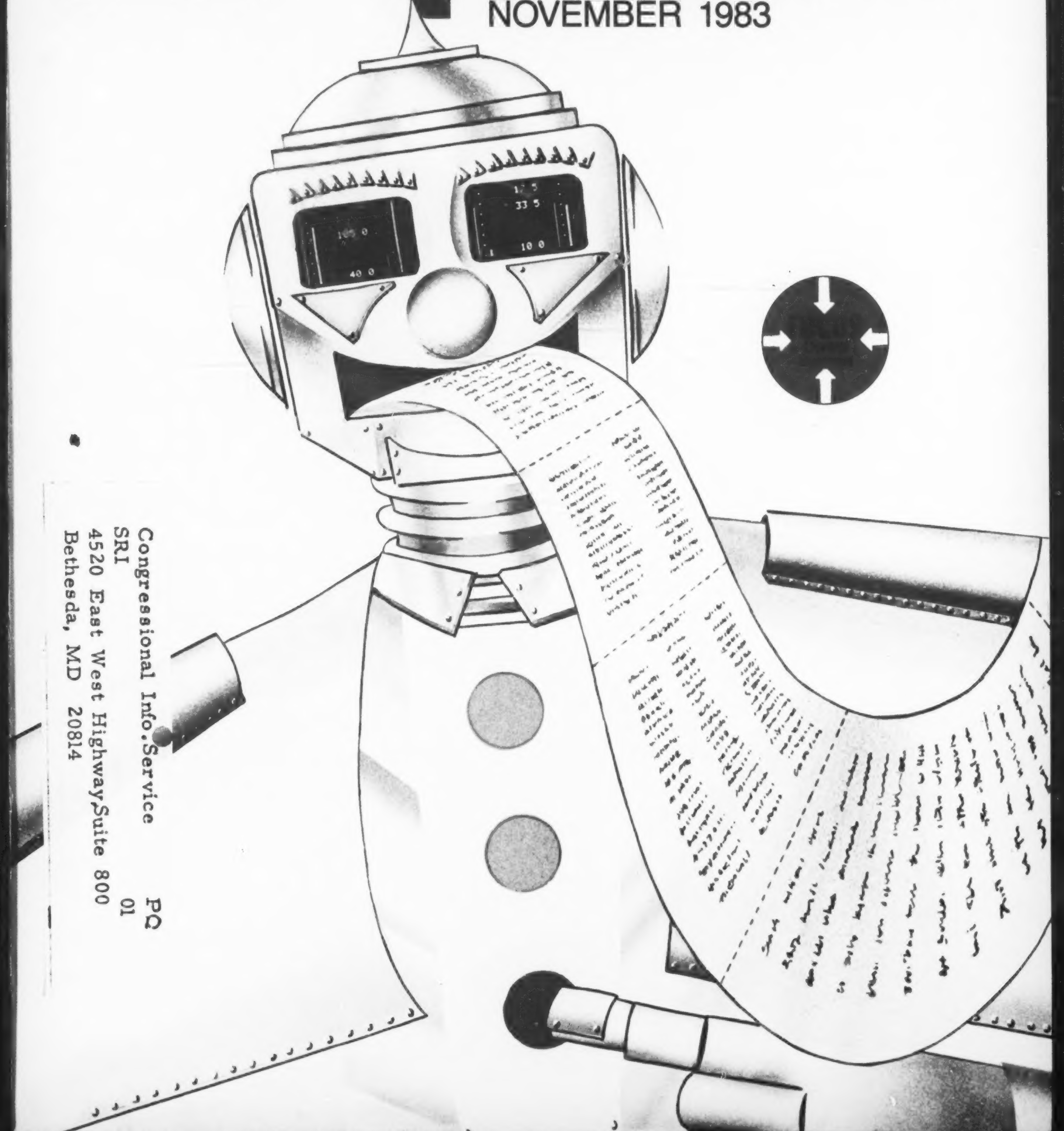

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A convention preview, scouting the upcoming combined NSGA/NRMCA/NCSA meeting.

ON THIS MONTH'S COVER

This whimsical creature spews forth vital data at the touch of a button; your business also may benefit through the use of automatic control systems, featured in this issue. Art by Janet Wilcox.

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industry news

NCSA, NLI approve consolidation plan

Executive committees representing NCSA and NLI approved a merger plan October 17; a special joint committee recommended adoption at the early 1984 meetings of both groups. If approved, consolidation would become effective no later than January 1, 1985.

ITC rejects antidumping petition

The United States International Trade Commission has determined that the domestic portland hydraulic cement industry is not being injured by cement imports from Australia and Japan. The decisions mean that the government will dismiss charges that foreign cement sold in California and Nevada at unfairly low prices violates the antidumping act.

The Commerce Department had ruled that portland hydraulic cement from Australia and Japan is being sold in the United States at unfairly low prices. An investigation revealed that Australian cement sold in the U.S. would have to be increased 136% to match the price in the home market; Japanese cement would have to be raised 37%, the department reported.

The investigation had been prompted by a petition from six cement companies and the AFL-CIO.

Comparison of 1983/1982 Construction Contract Values*

	8 Mos. 1983 (000,000)	8 Mos. 1982 (000,000)	Cumulative Percent Change
Nonresidential building	$ 40,749.6	$ 41,314.5	− 1
Residential building	62,242.9	36,867.1	+69
Nonbuilding construction	26,848.9	24,697.1	+ 9
Total construction	$129,841.4	$102,878,7	+26

Dodge Index
(1977 = 100, Seasonally Adjusted)

June 1983 .... 151 July 1983 .... 137 August 1983 146

**Based on statistics compiled by F.W. Dodge Div., McGraw-Hill Information Systems Co.*

Dust emissions standards proposed by EPA

After 5 years of intense negotiation between an industry task force and the Environmental Protection Agency, new source performance standards (NSPS) setting limits for dust emissions have been proposed by the federal agency.

Development of the standards resulted from a campaign waged by the inter-industry NSPS Task Group, consisting of members from these organizations: National Sand and Gravel Association; National Crushed Stone Association; National Limestone Institute; National Industrial Sand Association; National Lime Association; Associated General Contractors of America; Colorado Rock Products Association; Ohio Aggregates Association; and the Southern California Rock Products Association.

Chaired by Michael J. Hart, Flatiron Sand and Gravel Co., Boulder, Colo., the task force successfully steered EPA away from potentially oppressive and costly measures that, in draft form, called for 0% opacity and "no visible emissions" requiring baghouses in many situations.

The proposed standards specify emission limits that must be met, but do not dictate what type of control equipment or technique must be used. The EPA has decided to designate wet dust suppression, as well as baghouses, as best demonstrated technology.

The pieces of equipment to which the standards proposed would apply are: crushers, grinding mills, screening operations, bucket elevators, belt conveyors, bagging operations, storage bins, and enclosed truck or railcar loading stations. Specifically excluded are emissions from haul roads, stockpiles, drilling, blasting, loading at a mine, and conveying (other than transfer points).

Stationary plants with capacities of 25 tph or less and portable plants with capacities of 150 tph or less are exempt from proposed standards.

Comments on the proposals from the public must be submitted by November 14, 1983, to: Central Docket Section (A-130), atttention: Docket No. QAPS-78-11, U.S. Environment Protection Agency, 401 M St., SW, Washington, D.C. 20460.

IFC to help finance Colombian cement plant

The International Finance Corp. has signed agreements under which IFC will provide loan and equity funds to Cementos Rioclaro S.A., for the construction of a $102 million cement plant in

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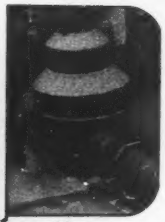
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ON THIS MONTH'S COVER

A montage of sights from Chicago, host city to ConAgg 1984, reveals the diversity of the Windy City. Photos courtesy of Chicago Convention and Tourism Bureau, Inc.

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luctant to make major new equipment purchases. Alternative methods of acquiring equipment, such as buying used or renting, also continue to affect demand for new equipment. In other cases, the survey showed customers are fixing up their existing machines, resulting in an expanded parts and service business for distributors in some areas.

Comparison of 1983/1982 Construction Contract Values*

	9 Mos. 1983 (000,000)	9 Mos. 1982 (000,000)	Cumulative Percent Change
Nonresidential building	$ 46,032.3	$ 46,179.6	—
Residential building	70,945.0	42,422.5	+67
Nonbuilding construction	30,077.0	28,098.2	+ 7
Total construction	$147,054.3	$116,700.3	+26

Dodge Index
(1977 = 100, Seasonally Adjusted)

July 1983 .... 137 August 1983 .... 146 September 1983 143

**Based on statistics compiled by F.W. Dodge Div., McGraw-Hill Information Systems*

Government underfunding hurting public works

Speaking before a panel of mayors investigating infrastructure decay, Doug Pitcock, senior vice president of the Associated General Contractors of America, said the $56 billion invested annually by all levels of government will fall $2 trillion short of the $3.03 trillion minimum required to rebuild over the next 19 years.

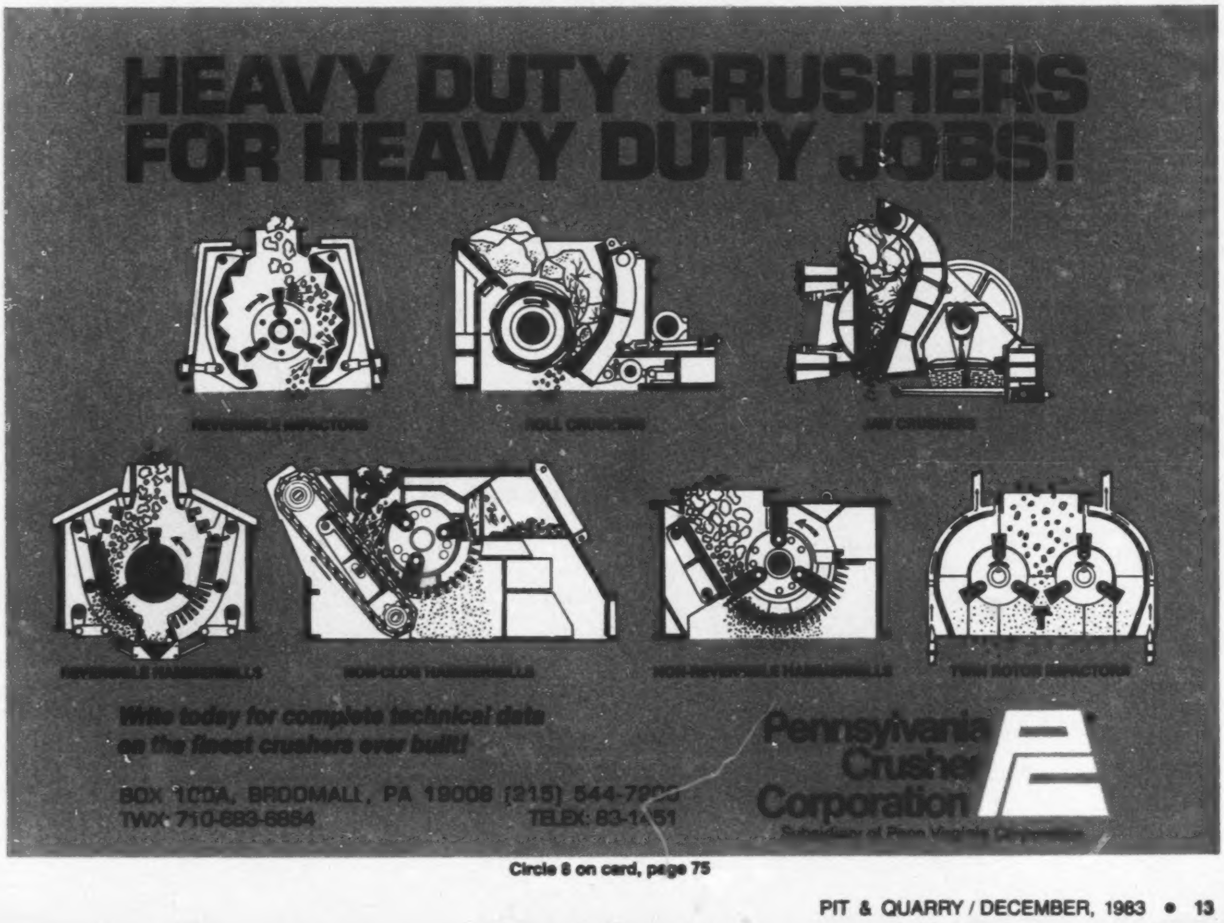
Pitcock also said that, since 1965, the percentage of the gross national product devoted to spending on public works by all government levels has dropped by 44%. The AGC is lobbying for a realignment of funding priorities toward essential capital investment and away from social services. Pitcock told the panel that for each $1 billion spent on construction, 63,000 jobs are created, and that construction spending increases benefit 38 separate industries, according to a U.S. Bureau of Industrial Economics report.

Indian cement company orders major process equipment

The Cement Corporation of India, New Delhi, has given a contract valued at $8.5 million to Fuller International Inc., for major process equipment to help the firm's Neemuch facility expand by 1 million mtpy. The new dry process line will include flash calcining technology similar to that working successfully at other Fuller-built plants in India. Major equipment includes an SF-141 preheater with flash calciner; a rotary kiln 15 × 220 ft. long; an LM 43.40 Fuller Loesche roller mill for raw material grinding; a semi-direct fired coal grinding system using an LM 21-20 Fuller Loesche coal mill; and a 231-sq. ft. grate cooler.

IFC to loan $25 million to Indonesian cement firm

The International Finance Corp. is lending $25 million to help finance an approximately



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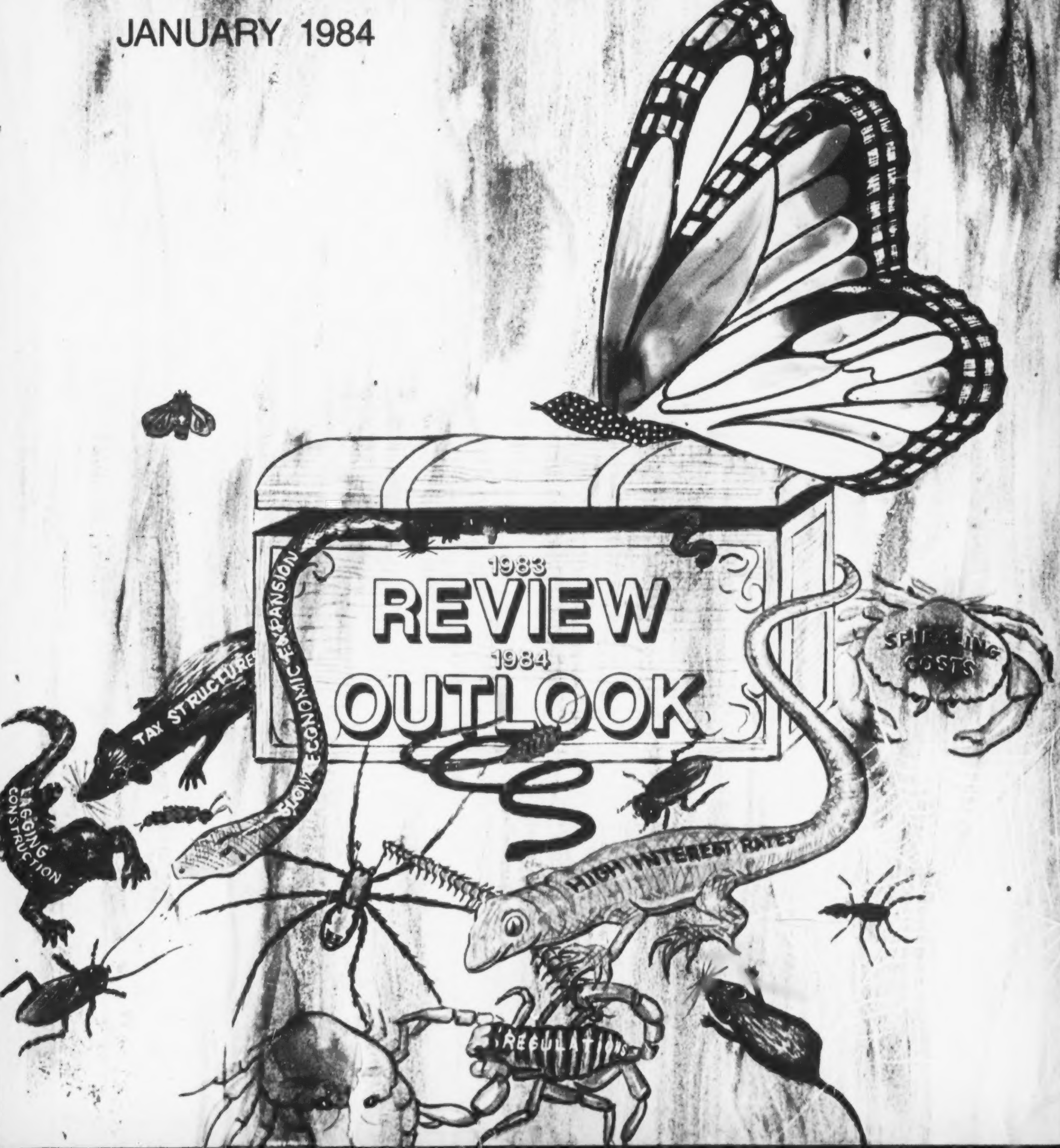
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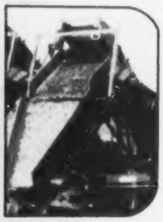

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ON THIS MONTH'S COVER

Will 1984 be the year when recovery emerges from the problem-infested darkness of the recent past? Industry and association leaders, commenting in our Review & Outlook section, seem to think so. Art by Janet Wilcox.

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Public works

Public works construction, which has been declining since 1980, received a shot in the arm in 1983 when the government passed the Surface Transportation Assistance Act. Its 5¢-per-gallon fuel tax, 80% of which goes to highway and bridge construction, will generate an estimated $23 billion in construction over the next 4 years. As a result of this act, highway and bridge construction in 1983 was almost $3.5 billion above the figure forecast for that year. With the continued support of the STAA tax, highway and bridge construction will jump 10% from its $15.45 billion total in 1983 to $16.95 billion in 1984. Because of tight finances many of the major roads and highways were permitted to deteriorate and go unmaintained. It will take a number of years before these roads can be brought back to proper condition.

Sewer and water facility construction, which surpassed expectations in 1983, reached an estimated level of $7.525 billion. A brighter look for housing construction has caused some sewer and water projects to move from the drawing board to the initiation of actual work projects. Although remaining at a fairly high level, sewer and water construction projects will decline a modest 2% in 1984 with a volume of $7.4 billion.

Other public works, the smallest segment of the nonbuilding construction sector, with a volume of $6.75 billion in 1983 was about 7% higher than the 1982 total. This total, it appears, will ease downward about 4% in 1984 to $6.5 billion.

Utilities

With the growth in housing starts and construction in general comes a need for more telephones and electric power. To accommodate these increases, existing utilities have to be built. Due to the increased demand, construction in this segment appears destined to have a substantial growth of 16% in 1984, climbing from $9.5 billion in 1983 to $11 billion the following year.

To meet 1984's increase in construction demand, there will have to be a comparable increase in the production of sand, gravel, crushed stone, and cement—all basic materials in making concrete. Capacities of some of the existing plants will have to be increased and some new plants will have to be built to meet the growing need for these materials. This, of course, will strongly stimulate the purchase of new equipment. This is borne out by the Concrete Industry Manufacturer Association survey released in November 1983. Most of the U.S. construction equipment manufacturers expect the demand for their equipment will be from 20% to 31% higher than it was in 1983. This is very encouraging news and indicates that the construction industry and those associated with it are well on the way to recovery. ●

Views from national association leaders:

CEMENT: anticipate steady growth

William J. Young
President
Portland Cement Association

An increase of nearly 10%—that is the encouraging news concerning 1983 U.S. portland cement shipments vs. shipments of 1982. According to Bureau of Mines data, 1983 shipments are expected to total 69 million tons; 1982's total was 63.1 million tons. PCA market and economic forecasters expect another 10% increase in 1984 when shipments are projected to total 76 million tons of portland cement; some 3 million tons is the expected total for masonry cement.

After declining for 4 consecutive years, construction turned upward in 1983 because of the surge in homebuilding. Indeed, the surge in homebuilding probably was the single most significant factor in the nation's 1983 economic growth.

At this writing, total new construction in 1983 is forecast to increase slightly more than $9 billion (in constant 1977 dollars); increased housing will more than offset continued decreases in most other 1983 areas of construction activity. The latter include non-residential construction (a decline in the first half of the year) and flat, overall public construction (although highway construction increased, sewer and water facilities exhibited a sharp decline). Only light commercial building is expected to show gains before 1984.

The course of 1983

Mild weather was a critical factor in the cement recovery that began in January. Compared to January 1982, shipments rose 27% for portland cement and 59% for masonry cement. Then, wet and cool weather in March, April, and May offset potential gains from the strong economic recovery. The cement recovery began again in June and gained strength through the rest of the year. The pace, however, was slower than expected particularly when compared to the surge in housing starts.

We expect increased homebuilding to continue to have a favorable effect on cement well into 1984. Increases in other markets, notably highway and light commercial construction, are just beginning to boost concrete construction.

Outlook: 1984 and beyond

Construction activity should increase more in 1984 than it did in 1983. In addition to homebuilding, the lagging private non-residential and public construction markets also should be expanding.

Beyond 1984, construction of all types, especially non-residential building, will benefit from moderate inflation and more favorable federal tax treatment. As a result, we expect construction will provide an increasing share of real GNP in the next 5 years.

The PCA forecast, published in October 1983, is quite conservative in this respect; the construction/GNP ratio is projected to peak at 8.1% in 1986. Given the recent favorable changes in the inflation rate and tax legislation, a higher ratio is possible. Additional gains in the ratio likely will come from non-residential and public construction rather than from homebuilding. Non-residential construction is more sensitive than other types of construction to after-tax rates of return on investment, and public construction is being encouraged by growing public awareness of the nation's deteriorating infrastructure.

General observations

We believe that, because the recent recession was unusually long and severe and the early recovery modest, the expansion will evolve more slowly but last longer than average.

The structure of the economy of the 1980s likely will differ radically from that of the 1970s. Inflation is expected to be much lower though interest rates probably will remain high by historical standards. One reason for this incongruity is the prospect of $200 billion federal deficits each year well into the economic expansion. Should Congress and the Administration solve the deficit problem, the overall economic outlook would improve dramatically. Interest rates would decline to the single-digit ranges common in the 1950s and 1960s. Interest-sensitive industries such as construction probably would boom.

However, the wiser course at this time, we believe, is to assume that government deficits will be a hindrance for the next several years. As a result, the economy and construction will grow at a moderate pace. The U.S. gross national product is forecast to grow no more than 5% annually after adjustment for inflation. However, inflation, as measured by the consumer price index, is projected to increase no more than 6% per year, and the unemployment rate should decline steadily to a low of 7%.

Summing up, increased activity is expected in 1984 followed by continued growth in most construction markets in 1985. At some point, housing starts are expected to peak at 1.85 million units, well below housing's pace in previous expansions. Some slowing is anticipated for 1986 followed by declines in 1987 and 1988.

Construction should prosper in 1984 with gains expected in virtually every market. Because 1984 also will be an election year, activity might be even better than average for this point in the business cycle.

	thousands of tons of portland cement					
Region	1983	1984	1985	1986	1987	1988
Eastern	11,900	12,900	13,500	13,500	12,700	11,700
Great Lakes-Midwestern	9,100	10,200	11,300	12,000	11,500	10,000
Southeastern	12,500	13,500	14,000	14,500	14,000	13,000
North Central	3,600	4,100	4,500	5,000	5,000	4,500
Rocky Mtn-Northwest	5,400	6,200	7,200	8,000	8,500	8,000
Pacific-Southwest	9,100	10,500	12,000	12,500	13,000	11,500
South Central	17,400	18,600	20,000	20,300	20,500	19,500
Total Portland Cement	69,000	76,000	82,500	85,800	85,200	78,200

CRUSHED STONE: industry in recovery

William L. Carter
President
National Crushed Stone Association

This time last year, things looked rather bleak—highway monies were running out and there was a glimmer of hope that the lame duck Congress would pass legislation to change that course. NCSA and virtually every other highway-related association were hard at work trying to raise awareness in Congress and the public sector of the desperate need for increased federal highway funding.

NCSA's theme for our 1983 annual convention, "Recovery Road," told the story of how the industry might perceive the coming year; however, that optimism was not shared by everyone. How far have we traveled on recovery road during 1983?

The Surface Transportation Assistance Act of 1982, which became law on January 6, 1983, has had a decisive impact on that story. According to the U.S. Bureau of Mines, if STAA 82 had taken full effect, the stone industry would have experienced a 70-80 million ton increase in demand for road construction and repair work during 1983. For 1984, they predicted an increase of 100-120 million tons.

This, however, has not been precisely the case. In 1983, according to Fred Block of the Bureau's Division of Industrial Minerals, "contractual and other delays" have caused these figures to be lower.

The Bureau is about to release its final figures on 1982 stone production. Currently, these calculations show usage at about 790 million short tons. Industry predictions for 1983 look to be about 10% higher than 1982 with another 10% jump anticipated for 1984.

This marked increase in stone demand is not based solely on highway construction and repair; a considerable amount of stone also is being produced for other uses. For example, the residential construction industry has been more active because of lower mortgage and interest rates. And each quarter of 1983 showed an improvement in the seasonally adjusted indicators of the nation's construction industry. Because of this, the stone industry has enjoyed increases in demand for construction uses.

McGraw-Hill Information Systems recently predicted that the construction industry will see an overall 7% gain in 1984. Residential construction is expected to show a 10% gain over 1983 and to be more stable through the year. But the overbuilt office building market is expected to limit nonresidential construction, putting the burden of continued recovery on contracting for industrial and light commercial building. These areas should show gains of 20% or more during 1984.

According to George Christie, vice president and chief economist for McGraw-Hill, three broad and basic assumptions underlie this forecast: (1) the recovery is firmly established and will continue to grow in 1984, resulting in diminished excess industrial capacity and lower unemployment; (2) inflation will remain within the range of 4-6%; and (3) long-term interest rates will remain relatively stable, with mortgage rates between 13 and 14%.

Highways and other construction historically have had the most impact on crushed stone demand. However, there is some indication non-construction uses will increase, further contributing to the 10% increase in 1984.

As the industry moves to meet these demands, benefits also will accrue to those who supply equipment and services to it. Although equipment manufacturers have just reported a 26% decrease in demand during 1982 (the figures for 1983 are not yet available), it is anticipated that sale increases have been experienced this year.

After 3 years of declines in production resulting in lay-offs, reduced operating hours, patchwork repairs on equipment, and plant closures, the stone industry has changed its course.

Operating hours are expanding, requiring additional employees and employee-hours and equipment upgrading and replacement. In addition, increasing markets have brought new demands for more varied product mixes, finer aggregate sizes for 4R projects, and greater production. These demands should have more positive impact during 1984 on those who supply equipment, supplies, and services to the stone industry.

Most producers will continue using existing equipment and methods of operations. However, there is a move to meet these higher demands through automation. According to a recent NCSA industry survey, more operators are turning to automation to improve their product, their cash flow, and their bottom line. One major problem they are trying to overcome with automation, according to their reports, is their inability to replace the skilled and reliable workers they were forced to lay off during the recession.

Although this summary for 1983 and 1984 may appear very optimistic and promising, it is not to say that all crushed stone producers will benefit equally from the current recovery.

If nothing else, the recession taught us that hardships are not shared equally. Weathering hardships, social or economic, is a part of doing business, and some companies do better than others. Many companies did not survive the recession; others positioned themselves to take advantage of the eventual upturn.

In order to realize any lasting improvement from the current recovery, we must continue working to address long-term questions and problems. There are no substitutions for planning, sound marketing, efficient operating, good community relations, and just plain hard work.

We need to continue efforts to research the performance of stone in a wide variety of applications and to look for economies in operations. Finally, we must continue to be active in political and regulatory processes so that our long-term ability to stay in business can be assured.

Next year will be a challenge and an opportunity for the stone industry. We predict that producers willing to face the challenges, seize the opportunities, and accept the responsibilities will see more immediate rewards than in the past. These operators can, and will, create a steady improvement for their businesses in 1984 and beyond.

LIMESTONE: strong recovery in '84

James H. Williams
President
National Limestone Institute

Our industry, I honestly feel, is right on the brink of a long overdue renaissance. We, along with almost all other industries, are feeling relief from the pressures of a recession that hurt virtually everyone to some degree. We began to see that recessionary pressure lift somewhat in 1983, and I have every reason to believe our industry will recover remarkably in 1984. There still are pockets in our industry where the recovery has yet to be felt to any significant degree; those areas should, in 1984, begin to see relief and gain strength.

We had the benefit of passage of the federal highway bill in 1983 increasing federal funding for highway construction, its repair and rehabilitation. Those dollars just began being channelled to our people in mid-to-late 1983. In 1984, those dollars likely will have a greater impact as more construction/repair gets underway. In addition to increased federal funding, more and more states have increased their highway budgets. Here again, we will be among the primary beneficiaries.

Housing starts are on the increase and, as housing improves, so too does the general construction climate and all those industries impacted by it; this will help not only the limestone industry, but the economy as a whole. Housing is improving for one very important reason: interest rates are down. Let us hope they remain down, throughout 1984; perhaps not as low as some would like, but certainly considerably lower that we have seen over the past few years. My own instincts tell me that a 6% inflation rate for 1984 is a realistic expectation.

I think one of the issues that have been given some, but not necessarily enough, attention over the past years is that of the infrastructure. The needs of our deteriorating public facilities are very real. As more and more attention is drawn to this, we are likely to see the necessary federal funding climate improve. Again, the construction industry will benefit. 1984 will not necessarily be the year that infrastructure dollars reach the hands of our industry, but it may well be the year in which the legislative initiatives start to move.

An area of paramount concern lately surrounds the intense interest in combating acid rain. Our involvement with studies and legislative initiatives to help alleviate the problems acid rain causes our environment (particularly our lakes and streams), makes it apparent that the limestone industry will be a cornerstone in combating the problem. The legislative ball should get rolling in 1984 and that prospect encourages us—and environmentalists—for the future.

Of course, we have long been active in soil conservation through the use of agricultural limestone. There continues to be widespread use of aglime, and it should perhaps escalate as farmers have more dollars, through a stronger economy, to invest in conservation measures. Unfortunately, when those farmers were weathering the recession, conservation measures may not have had the priority they do during a healthier economy. So there's some catching up to do, and 1984 should be the year for it.

Two things do concern many of us: deficits and interest rates. Those concerns, however, as real as they may be, do not appear to be a damper to the recovery—or not at least to the day-to-day operation of our members. We've wanted a strong economy for so long, we're not going to let anything come in the way to dissuade us. No doubt the deficit will have an impact on our future, but it won't immediately. Necessary deficit reduction programs will be instituted and all hopefully will stay on course.

I feel very good about the year ahead. The economy is growing, unemployment is down. You cannot ignore the fact that 1984 is an election year. That in itself should prove promising for the recovery. It is unlikely the Administration will allow the economy to falter when they undoubtedly will be judged on their handling of the recession and inflation. Both parties will make the economy an issue, and the people should benefit, for I can't imagine the recovery slipping in 1984.

The recovery is real. It seemed like an interminably long time in coming as we suffered. But now, 1984 will give us the momentum to meet the challenges ahead. I know our people are looking forward to it. We already feel good; in 1984, I think we will feel great. The patient is out of bed, and next year we may be running a marathon.

SAND AND GRAVEL: first increase since 1978

Jon I. Mullarky
Vice President
National Sand
and Gravel Association

The improving economy and the 1982 federal highway legislation have reversed the declining production trend for the sand and gravel industry. For the first time since 1978, industry production will increase from 1982's 653 million tons to an estimated 700 million tons for 1983. Industry sales are estimated at 2.2 billion dollars, good news for many producers.

Economic predictions for 1984 are favorable for continued growth in our industry. Construction should prosper with improvements in almost every segment of the market. The increase in residential construction will not match the 1983 increase; however, a 17% growth in the market will increase ready mixed concrete sales, and the industrial and commercial construction markets also will grow, increasing the demand for concrete. Since more than 40% of the sand and gravel produced in the United States is used as concrete aggregate, the increased market for concrete obviously will impact the sand and gravel industry.

The 5¢ gas tax increase, which fueled last year's production recovery, will continue to provide more funds for highway construction and rehabilitation. Construction spending on highway and street construction is expected to increase by 10% in '84. Highway related projects should use almost 300 million tons of sand and gravel this year.

Overall, sand and gravel production this year will increase by 10% to almost 770 million tons.

SLAG: modest increase likely

H. K. Eggleston
President
National Slag Association

The slag industry has been, and will continue to be, in the process of adjusting to both lower total availability of slag and the reduction in the number of sources due to steel plant closings. As slag availability is proportional to steel production, total slag utilization in 1983 will be down about 8% from 1982. A modest increase is likely in 1984 as, with improvement in the economy, the steel industry increases its production of iron and steel.

The steel industry, in adjusting to lower demands for steel, has stopped operations at locations having small production capacities and concentrated its production at locations with large blast furnaces. It appears this trend will continue, thus reducing the number of slag sources.

As a result, the slag industry is concentrating its efforts on upgrading the use of slag by documenting its value for more technically sophisticated purposes, such as a cementitious material, for high-skid-resistance highway surfaces, and as a lightweight aggregate. Assisting in this effort have been improvements in the configuration and operation of the pelletizing machine to produce either a lightweight aggregate or a material suitable for cement, and the final approval of an ASTM specification for ground granulated blast furnace slag (ASTM C-989). It has been determined that slag, solidified either by the pelletizer or the traditional water-quenching method, can produce a product suitable as a cementitious material. The use of the pelletizer for this purpose greatly reduces the initial capital investment required and provides greater product and marketing flexibility. This should increase the amount of blast furnace slag converted into cementitious material.

Laboratory and field tests have proven the superiority of both blast furnace and steel slags to provide long lasting skid resistance for highway surfaces. With the emphasis on improving skid resistance and the importance of using an aggregate that will maintain high resistance over a long period of time, increased use of both types in highway construction and maintenance is anticipated.

LIGHTWEIGHT AGGREGATE: rebounds after tough years

Theodore R. Berger,
Executive Director
Lightweight Aggregate
Producers Association

The lightweight aggregate industry in recent months has rebounded after several tough years in which production was spotty. As with most industries, lightweight aggregate demand is dependent on the health of the economy and, also of priority importance, customer confidence about investing in a commercial or residential construction project over the long term, especially in the face of high interest rates and spiraling costs.

Attrition in the industry has taken a heavy toll of both tonnage and the number of operating plants. The growth years of the 1950s and 1960s were succeeded in the middle '70s by a number of plant closings or curtailments brought on by a series of hammer blows including soaring fuel prices, extraordinary environmental pressures, and declines in building activity.

1984 holds promise of a more hopeful scenario. For our producer members, who manufacture aggregate by the sintering or traveling grate process, taking clays and shales and burning them at high temperatures under close quality control, the primary market is largely in masonry units, with lesser demand for structural lightweight concrete.

One of the brightest developments seems to be the heightened interest in the adaptability of lightweight aggregate masonry units for passive solar homes. Masonry units made with lightweight have definite advantages over units made with conventional aggregates because of an ability to retain heat longer.

Put simply, because lightweight aggregate takes longer to drive heat into the masonry unit, it has a better retention factor and a slower release than heavier material. While we still are learning a lot about this potentially key market in solar homes, experience shows that quite a few are being built with efficiency of anywhere from 45%-70%.

Imaginativeness of design and construction is the key to energy efficient solar homes. Cooling pipes set 5 ft. below the ground bring air directly into the living space. A second method brings air through lightweight block walls; this means less humidity than direct cooling, especially in very hot weather when the temperatures may be in the 90's. Air conditioning may be called on to help alleviate the humidity but the energy cost is lessened considerably by use of cooler sub-surface air that averages some 54°F. In either instance, the cost savings are significant whether the design calls for air introduced directly into the living space or through the lightweight block walls.

So, building with lightweight aggregate seems on the upside in the industrial, commercial, and residential categories. Less familiar but increasingly sophisticated outlets for lightweight aggregate include utilization as a top dressing for golf courses and running tracks and for a variety of applications in agronomy.

It is our view that 1984 should be regarded with optimism. There has been some backup in inventory in the last quarter because of acceleration of production schedules, but the outlook is much improved measured against the past 5 or 6 years.

EXPANDED CLAY & SHALE: 1984 looks promising

Harry C. Robinson
Managing Director
Expanded Shale Clay and Slate Institute

The members of the Expanded Shale Clay and Slate Institute (rotary kiln process) are expecting a positive finish to the 1983 construction year. There was a dip in the use of lightweight aggregate for structural concrete and concrete masonry in 1982. Then use started to climb a little in the first quarter of 1983 but, when interest rates went up again in mid-1983, construction tapered off and so did the use of lightweight aggregate. We are predicting that the last quarter of 1983 again will show an upturn in the use of aggregate.

If we study the picture from a regional standpoint, we see that several regions have been having a record 1983 year. Approximately 65% of lightweight aggregate is used in the production of concrete masonry units, 25% is used in the structural field, and the remainder goes for flexible pavement and special uses.

Efficient use of energy remains top priority for everyone. Members continue to improve their production techniques, thereby reducing their energy use.

1984 looks very promising as long as interest rates for construction remain relatively stable. Predictions for 1984 are that the industry will see better than a 20% increase over 1983. Due to improvement in production techniques, we can assure all concerned that there will be ample material to fill construction needs for 1984.

LIME: Rebounds slightly in '83

Kenneth A. Gutschick
Executive Director
National Lime Association

Following a disastrous 1982 when lime output fell to a 20-year low, the lime industry started to rebound in early 1983; it is expected lime output will gain a modest 7-8%, to about 15 million tons for the year. Based on the general improvement in our nation's economy, which started in early '83, a similar gain is expected in 1984 lime shipments. However, this expected increase still will leave the industry in the doldrums, some 25% below the all-time record of 21.6 million tons set 10 years ago.

In 1983, lime production was lower in the first 3 months of the year, compared to '82. From April on, output increased gradually and, in August, it reached the '82 cumulative total. The final 4 months of the year will show the greatest gains, mainly because the final 4 months of '82 had the lowest lime production in more than two decades.

In 1983, nearly all markets were up, with fluxing lime leading—up an estimated 15%. Finishing and mason's lime are expected to be up 13%, chemical and industrial uses up 3%, and stabilization lime up 1%. Agricultural lime will be off slightly in 1983.

The increase in fluxing lime, lime's number one use, is related, of course, to the modest resurgence in the steel industry, with production growing from a minimum of 4.5 million tons in December, 1982 (only 34% of capacity) to around 8 million tons per month by late summer. The substantial increase in construction activity in '83 has led to modest gains for building lime. Environmental uses also have gained, particularly lime for scrubbing SO_2 from stack gases at power plants; for the first time this use will exceed 1 million tons in '83, probably reaching 1.1 million tons. This particular market is one bright spot in lime's future with the use expected to exceed 3 million tons by 1990.

Because of the serious recession and slowness in recovery, there was a dearth of expansion activity in the lime industry in '83. Only two new kilns were placed in operation—Chemical Lime Co.'s double shaft kiln at Marble Falls, Tex., for producing dolomitic lime; and U.S. Gypsum Co.'s preheater rotary kiln in New Braunfels, Tex. In addition, U.S. Gypsum installed a new pressure hydrate system for producing Type S dolomitic building lime at the new Texas plant, the first to be built in that state.

Portland cement in the United States: production and project survey

Portland Cement Shipped by Producers in the United States*
(million short tons)

1977	76.5
1978	82.4
1979	82.0
1980	73.2
1981	69.0
1982	63.4
1983 (estim.)	69

U.S. Imports of Hydraulic Cement & Cement Clinker for Consumption
(million short tons)

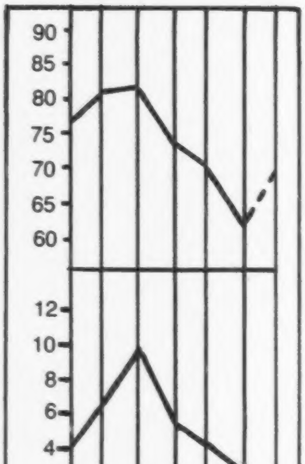
1977	4.04
1978	6.60
1979	9.41
1980	5.26
1981	4.00
1982	2.93
1983 (estim.)	2.7

New Housing Starts
(millions of units)

1977	2.002
1978	2.036
1979	1.760
1980	1.313
1981	1.100
1982	1.072
1983 (estim.)	1.7

New Construction Put-in-Place in the United States
(billion dollars)

	a. Current	b. 1972 $	c. 1977 $
1977	$173.83	111.1	173.4
1978	205.56	116.7	182.0
1979	230.41	115.1	179.0
1980	230.75	103.4	161.1
1981	238.20	98.7	156.2
1982	229.55	—	144.8
1983	—	—	150.5 (est.)



**Puerto Rico not included. See Fig. on pg. 60 for Puerto Rico data.*
Sources: U.S. Bureau of Mines; U.S. Dept. of Commerce; Portland Cement Association; Dodge/Sweet's Construction Outlook; Pit & Quarry estimates.

By Sid Levine

The 5-year slide in cement production and consumption in the United States bottomed out in 1982. Portland cement shipments by U.S. producers dropped from the record 82.4 million short tons in 1978 to 63.4 million tons in 1982. The Portland Cement Association has projected a 10% increase in portland cement consumption for 1983 over 1982 and another 10% increase in 1984. Masonry cement consumption is expected to show a 25% growth for 1983 over 1982 and a 13% increase in 1984.

Increased homebuilding is primarily responsible for the improved outlook for cement, according to the PCA. Appreciable increases in roadbuilding and road maintenance are additional positive factors for 1983 results. Passage of the federal 5¢-a-gallon

Second production line at Florida Mining & Materials' cement plant in Brooksville, Fla., has doubled capacity to 1.2 million stpy.

gasoline tax plus various actions by the states have made funds available for construction.

The value of new construction put-in-place in the United States, in constant 1977 dollars, amounted to $144.8 billion in 1982 compared to the record high of $182 billion in 1978. The *Dodge/Sweet's Construction Outlook* (October 1983) projects housing starts to reach 1.7 million units in 1983 and 1984. The record is 2.036 million starts achieved in 1978. A detailed review and forecast for construction in the United States, prepared by James Kostka, *Pit & Quarry's* director of marketing and research, is published in this issue.

Markets

The use of cement differs from year to year depending, in part, on the mix of construction activity. Residential construction usually consumes from 25-30% of the cement output; public works, 18-22%; private industrial and commercial buildings, 15-20%; public buildings, 7-10%; transportation, 15-18%; and other construction, 5-8%.

Portland cement makes up about 90% of shipments by the hydraulic cement industry; the remaining 10% consists of masonry, mixed, natural, and lime cements. Demand is growing for oil well cement; the product accounted for about 5% of portland cement output in 1981 compared to only 2% in 1975.

In 1982, the concrete industry customers for portland cement were: ready mixed concrete industry, 68.5%; concrete product producers (block, pipe, precast, prestressed, dry mix), 11.9%; highway contractors, 4.4%; other contractors, 7.1%; building materials dealers, 5.8%; government agencies, .3%; and miscellaneous, including own use by producers, 2%. Cement consumption in the United States by Portland Cement Association regions is shown in an accompanying table.

Production

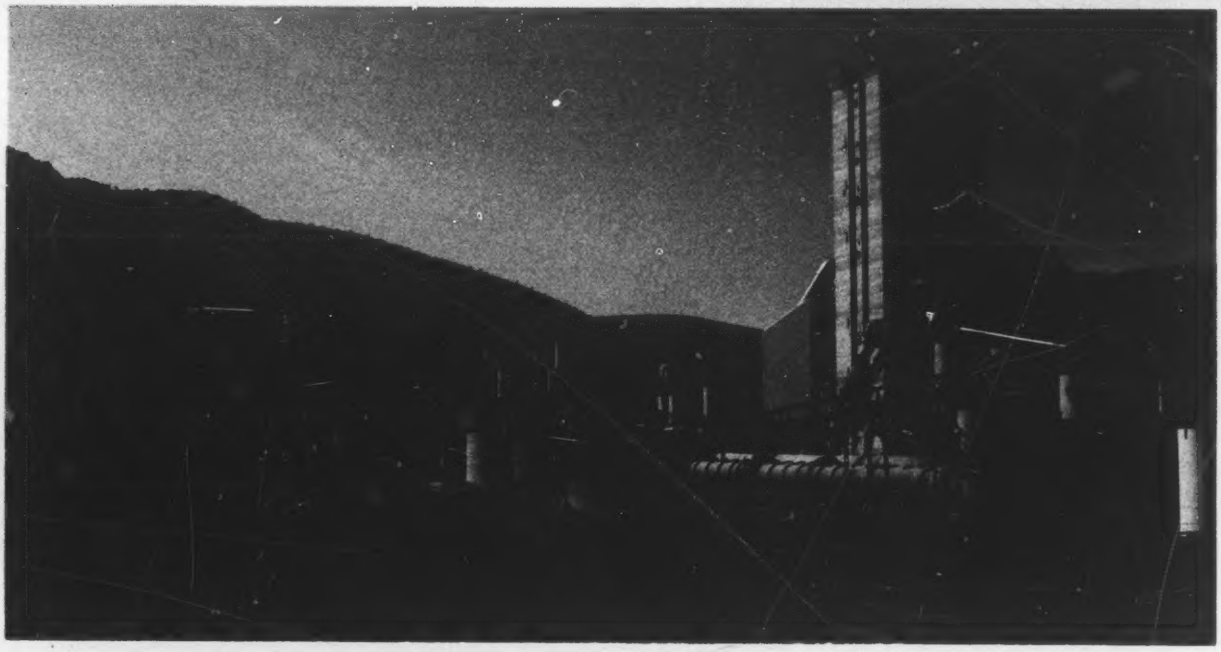
Clinker was manufactured in 136 plants in the United States and in two plants in Puerto Rico. Finished portland cement, ground

Hydraulic Cement Shipped by Producers in the United States—Value
(billion dollars)

	In current dollars			In constant 1972 dollars
	Portland cement	Masonry cement	Total	Total
1977	$2.831	$.170	$3.001	$1.72
1978	3.413	.210	3.623	1.85
1979	3.856	.205	4.061	1.85
1980	3.800	.190	3.990	1.65
1981	3.666	.163	3.829	1.60
1982	—	—	3.880	1.50

Clinker Capacity in the United States

Year	Active plants	Apparent annual capacity (million short tons)	Production (million short tons)	Percent utilized
1977	155	86.3	70.7	81.9%
1978	155	87.2	74.1	85.0
1979	155	87.8	74.8	85.2
1980	150	89.7	68.3	76.1
1981	142	89.4	66.6	74.5
1982	136	86.8	59.3	68.3



Kaiser Cement's modernized plant in Lucerne Valley, Calif., has increased capacity to 1.6 million tpy with replacement of wet process by dry process line.

Masonry Cement—Production and Shipments in the U.S.
(million short tons)

Year	U.S. production			Shipped by producers in the U.S.*
	From clinker	From cement	Total	
1977	—	—	3.720	3.764
1978	3.360	.742	4.124	4.150
1979	3.129	.704	3.748	3.762
1980	2.621	.431	3.040	3.050
1981	2.445	.334	2.738	2.746
1982	—	—	1.3 (estim.)	1.4 (estim.)

Includes masonry cement imported and distributed by domestic producers only.

Puerto Rico: Cement Production and Consumption

Year	Clinker production				Portland cement shipped by producers* (million short tons)
	Active plants	Apparent annual capacity (million short tons)	Production (million short tons)	Percent utilized	
1977	2	1.896	1.337	70.5%	1.367
1978	2	1.880	1.390	73.9	1.442
1979	2	1.885	1.338	71.0	1.406
1980	2	2.238	1.433	64.0	1.482
1981	2	1.962	1.101	56.1	1.226
1982	2	1.962	.928	47.3	.986

Includes imported cement distributed by Puerto Rican producers and other importers.

Average Mill Value (in bulk) of Cement in the United States*
(per short ton)

Year	Portland cement	Prepared masonry cement**
1977	$36.36	$45.03
1978	40.70	50.53
1979	46.24	54.59
1980	50.89	62.11
1981	52.20	59.29

Includes Puerto Rico. Mill value is the actual value of sales to customers, fob plant, less all discounts and allowances, less all freight charges to customer, less all freight charges from producing plant to distribution terminal if any, less total cost of operating terminal if any, less cost of paper bags and pallets.
***Masonry cement made at cement plants only.*

from domestic and imported clinker, was shipped from 149 U.S. plants and from two in Puerto Rico. Ten operations were used solely for the grinding of imported, purchased, or interplant transfer of clinker. Masonry cement was made in 100 plants in the United States. Production quantities for clinker, finished portland cement, and masonry cement are given in accompanying tables.

Apparent annual clinker capacity in the United States ranged between 86.3 and 89.7 million short tons between 1977 and 1982. Clinker utilization was only 68.3% in 1982 compared to highs of 85% in 1978 and 85.2% in 1979. Portland cement shipments from plants in the United States include: cement ground from clinker manufactured in U.S. kilns; cement ground from imported clinker; and cement imported and distributed by domestic producers only. Additional amounts are shipped by two Puerto Rican cement manufacturers and by other importers.

Shipments by cement types in 1981 were: general use and moderate heat (Types I and II), 89.06%; high early-strength (Type III), 3.66%; sulfate-resisting (Type IV), .28%; oil well, 4.66%; white, .47%;

portland slag and portland pozzolan, .97%; expansive, .08%; miscellaneous (includes waterproof cement and low-heat Type IV), .82%.

Imports and exports

U.S. imports of cement and cement clinker amounted to 2.93 million short tons in 1982, a drop of 27% from 1981, and 69% below 1979's record of 9.413 million tons. For 1983, imports are expected to show an 8% decrease compared to 1982. Exports of hydraulic cement amounted to 201,000 short tons in 1982 and 300,000 short tons in 1981.

Values and prices

The value of hydraulic cement (portland cement and masonry cement) shipped by producers in the United States and Puerto Rico totaled $3.88 billion ($1.5 billion in constant 1972 dollars) in 1981. The average mill value (in bulk) of portland cement in the U.S. in 1981 was $52.50 per short ton, and of masonry cement, $59.29 per ton. As reported in the October 6, 1983 issue of *Engineering News-Record,* portland cement prices (in bulk) for the week ranged from $54.03 per ton in St. Louis to $78.30 in Denver. Masonry cement process (per 70-lb. bags) ranged from $2.89 per bag in Philadelphia to $5.70 per bag in New York City.

Corporate changes

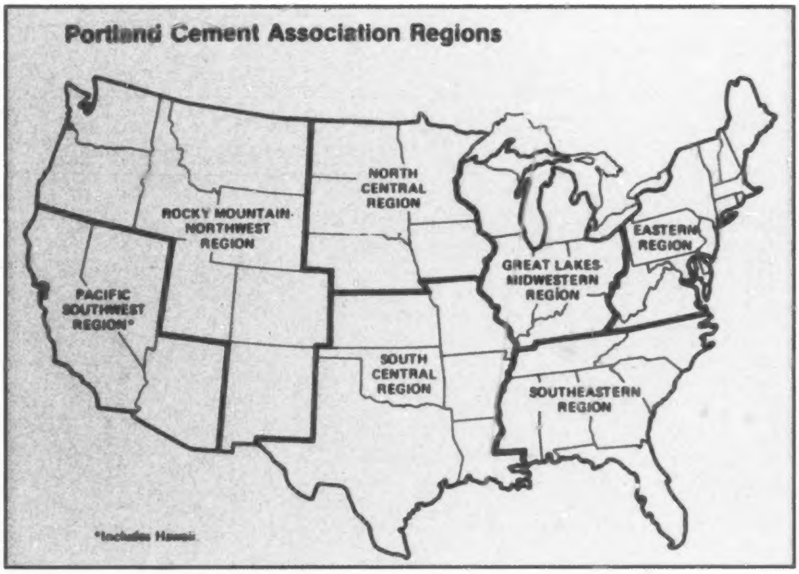
Foreign ownership of U.S. cement production capacity continues to increase. By year end 1983, an estimated 26% of clinker production capacity was owned by foreign interests. Economic conditions have also led to plant divestitures and closing of marginal plants.

Martin Marietta Corp. has divested itself of seven of its nine plants. Blue Circle Industries PLC, England, purchased three of the company's plants (located in Tulsa, Okla., Roberta, Ala., and Atlanta, Ga.) in 1983. Cementia Holding A.G., Switzerland, acquired Martin Marietta's Davenport, Iowa, plant which will be operated as the Davenport Cement Co. The Riverton Corp. of Front Royal, Va., bought Martin Marietta's Martinsburg, W. Va.,

U.S. Portland Cement Consumption by Portland Cement Association Regions
(in percent)

Region	1979	1980	1981	1982
Eastern	16.83	16.82	16.68	17.77%
Great Lakes—Midwestern	17.01	15.00	13.97	13.63
Southeastern	15.63	17.74	17.99	16.88
North Central	6.40	5.52	5.15	5.40
Rocky Mountain—Northwest	8.54	8.26	8.46	8.02
Pacific—Southwest	14.88	14.31	13.74	12.54
South Central	20.71	22.35	24.01	25.76
	100.00	100.00	100.00	100.00
Total U.S. consumption (in million short tons)	83.27	74.26	70.02	63.12

Based on Portland Cement Association "U.S. Cement Consumption Forecast," October 1983.



Portland Cement Association Regions

NORTH CENTRAL REGION
ROCKY MOUNTAIN-NORTHWEST REGION
PACIFIC SOUTHWEST REGION*
EASTERN REGION
GREAT LAKES-MIDWESTERN REGION
SOUTH CENTRAL REGION
SOUTHEASTERN REGION

*Includes Hawaii

U.S. Cement Consumption (million short tons)

Actual	Portland Cement	Masonry Cement	Total
1979	83.267	3.686	86.953
1980	74.255	3.003	77.258
1981	70.020	2.697	72.717
1982	63.084	2.388	65.472
Forecast			
1983	69.000	3.000	72.000
1984	76.000	3.400	79.400

Source: Portland Cement Association Market and Economic Research

Cement Plant Transfers and Closings: 1982-1983

Company	Plant location	Acquired by (or closings)
Ash Grove Cement Co.	....	Oregon Portland Cement Co. (1983)
Bessemer Cement Co.	Bessemer, Pa.	SME Bessemer Cement Co. (1983)
Cyprus Hawaiian Cement Corp.	Hawaii	Lone Star Industries, Inc. (1982)
Lehigh Portland Cement Co.	Alsen, N.Y.	Closed (1982)
Lone Star Industries, Inc.	Dixon, Ill.	Dixon-Marquette Cement, Inc. (1983)
Ideal Basic Industries, Inc.	Knoxville, Tenn.	Moore McCormack Cement, Inc. (1983)
Marquette Company	....	Lone Star Industries, Inc. (1982)
Martin Marietta Corp.	Tulsa, Olk.	Blue Circle Industries PLC (1983)
	Roberta, Ala.	Blue Circle Industries PLC (1983)
	Atlanta, Ga.	Blue Circle Industries PLC (1983)
	Davenport, Iowa	Cementia Holdings A.G. (1983)
	Thomaston, Maine	Cianbro Corp.
	Martinsburg, W.Va.	Riverton Corp. (1983)
	Northampton, Pa.	Closed (1982)
Monarch Cement Co., The	W. Des Moines, Iowa	Closed (1983)

Dual digital computer arrangement guides control room operations in California Portland Cement's new plant in Mojave, Calif.

The 15 Largest U.S. Cement Companies

	Finish grinding capacity (estimated)*	
	Million short tons	Percent of industry
Lone Star Industries, Inc.	12.5	12.0%
Ideal Basic Industries, Inc.	9.5	9.1
Lafarge Corporation	6.5	6.3
Gifford-Hill & Co., Inc.	5.3	5.1
Lehigh Portland Cement Co.	4.8	4.6
Kaiser Cement Corp.	4.3	4.1
National Gypsum Corp.	4.2	4.0
Dundee Cement Co.	4.1	3.9
California Portland Cement Co.	4.0	3.8
Southwestern Portland Cement Co.	3.3	3.2
Moore McCormack Cement Inc.	3.2	3.1
Medusa Cement Co.	2.9	2.8
Ash Grove Cement Co.	2.9	2.8
Texas Industries, Inc.	2.8	2.7
Blue Circle Inc.	2.0	1.9
		69.4%

**Includes gray, white, and grinding-only facilities. Does not include Puerto Rico. Estimated total U.S. cement capacity, as of year end 1983, =104 million short tons.*

Foreign Ownership of U.S. Cement Companies

Company	No. of plants	Approx. clinker capacity (million short tons)
Blue Circle Industries PLC (England) (purchased Martin Marietta plants)	3	1.9
Cementia Holding A.G. (Switzerland) (former Martin Marietta plant, now Davenport Cement Co., Davenport, Iowa)	1	0.8
Cementwerke Vigier A.G. (Switzerland) and Presa S.p.A. Cementeria di Robilante (Italy) (Alamo Cement Co.)	1	1.0
Genstar Ltd. (Canada) (Genstar Corp.)	2	1.2
Heidelberger Zement A.G. (W. Germany) (Lehigh Portland Cement Co.)	10	4.4
Holderbank Financiere Glaris S.A. (Switzerland) (Dundee Cement Co.; Santee Portland Cement Corp.)	3	3.3
Instituto Finanziario Industriale S.p.A. (Italy) (Hercules Cement Co.; River Cement Co.)	3	1.7
Societe Anonyme des Ciments Vicat (France) (National Cement Co., Inc.)	1	0.8
Societe des Ciments Francais (France) (Coplay Cement Co.)	2	1.3
Lafarge Coppee S.A. (France) (Lafarge Corp.)	10	6.0
Total		22.4

Notes: Total estimated clinker capacity at year end 1983 was 87 million short tons. Grinding-only facilities are operated in the United States by Lake Ontario Cement Ltd., Canada (Aetna Cement Corp.) and St. Marys Cement Ltd., Canada (Wyandotte Cement, Inc.).

cement plant and the Maine construction firm of Cianbro Corporation purchased the company's Thomaston, Maine, plant. The Maine plant then was sold to the Passamaquoddy Indian tribe of Maine and subsequently leased back to Cianbro for operation.

Lafarge Coppee, France, reorganized its North American cement operations in 1983 by establishing the U.S. based concern, Lafarge Corporation. The new corporation has become the parent company of Canada Cement Lafarge Ltd., Montreal, Canada, and the Lafarge U.S. operations. The Canadian Group acquired General Portland, Inc., United States, in 1981. Plant transfers and closings in 1982 and 1983 are listed in an accompanying table.

New cement plant start-ups, modernizations, and expansions in 1982 and 1983, and projected installations are listed in the following annual *Pit & Quarry* survey.

Commissioned in 1982

- **Ash Grove Cement Co.**—Louisville, Neb.: Added 600,000 tpy dry process line. Principal equipment: Humboldt-Wedag 1,800 tpd Pyroclon suspension preheater unit with a 12.5×164-ft. rotary kiln and a grate cooler; digital process control; programmable motor control. Engineering and construction services: Bendy Engineering Co.; Holmes & Narver, Inc.
- **Atlantic Cement Co., Inc.**—Sparrows Point, Md.: New 800,000 tpy slag cement plant using slag from Bethlehem Steel's Sparrows Point blast furnace. Design and construct contract: Davy McKee Corp.
- **California Portland Cement Co.**—Mojave, Calif.: Added 1 million tpy plant. Principal equipment: Fuller IHI precalciner; Fuller four-stage suspension preheater with flash furnace and 13.5×225-ft. rotary kiln; Fuller grate clinker cooler; Allis-Chalmers 250 tph, 2,000 hp roller mill for raw grinding; Humboldt Wedag 1,500-tph impact crusher; Leeds & Northrup dual computer. (See *Pit & Quarry*, July 1983, "New Mojave plant of California Portland under computer control,"

pp. 82-87).

- **Ideal Basic Industries, Inc.**—Theodore, Ala.: New 1.5 million tpy "Cris Dobbins" dry process plant. Principal equipment: Allis-Chalmers 4,660-tpd precalciner/reinforced suspension preheater system with 16 × 280-ft. rotary kiln and stoker-type clinker cooler; Stamler feeder-breaker in quarry; two Raymond coal mills; 65 MikroPulsaire dust collectors; two F.L. Smidth Unidan finish mills with 6,500 hp motors; four F.L. Smidth cement coolers. Design and construct contract: Brown & Root, Inc. (See *Pit & Quarry*, July 1982, "Ideal's Alabama plant on line," pp. 72-74).
- **Florida Mining & Materials Corp.**—Brooksville, Fla.: Expansion added 650,000 tpy to plant. Principal equipment: Polysius Gepol preheater/kiln arrangement rated at 1,650 tpd; Polysius air-swept raw mill, 153 tph; two-compartment finish mill rated at 100 tph; Fuller baghouses. (See *Pit & Quarry*, October 1983, "Florida Mining doubles capacity of Brooksville plant," pp. 100-105).

Commissioned in 1983

- **Kaiser Cement Corp.**—"Cushenbury" plant, Lucerne Valley, Calif.: Modernized and expanded plant increased capacity to 1.6 million tpy with replacement of wet process by dry process line. Principal equipment: 5,000-tpd Allis-Chalmers precalciner/preheater system with 16 × 250-ft. rotary kiln; Claudius-Peters recuperator/cooler; 7,000 hp F.L. Smidth center discharge raw mill; 4,000 hp, 13 × 42-ft. Compeb Allis-Chalmers finish mill; baghouse for kiln and mill; digital process and motor control. Engineering, equipment procurement, and construction management: Raymond Kaiser Engineers.
- **Capitol Aggregates, Inc.**—San Antonio, Tex.—Added 500,000 dry process line. Principal equipment: Fuller 12 × 165-ft. rotary kiln with flash furnace and grate clinker cooler; Fuller Loesche 120-mtph raw mill.
- **Texas Cement Co.**—Buda, Tex.: Added 470,000-tpy dry process line. Principal equipment (Fuller Co. contract): Fuller-Loesche roller mill; 3,500 hp finish mill system; baghouse dust collector; two 11 × 16-ft. material coolers; 20 ft. diam. air separator; preheater/flash calciner; conveying systems.

Scheduled for 1984 commissioning

- **Southwestern Portland Cement Co.**—Victorville, Calif.: Humboldt-Wedag has received a turnkey award for a $100 million modernization and expansion program. Capacity to be increased from 1.1 million tpy to 1.4 million tpy. Equipment addition will include an 800,000-tpy preheater/precalciner kiln, and the present 500,000-tpy wet process system will be retired. Holderbank Consulting is assisting in supervision of project execution.

Scheduled for 1985 commissioning

- **Monolith Portland Cement Co.**—Monolith, Calif.: Plant capacity to be doubled to 1 million tpy. A 15 × 17½ × 520-ft. kiln with capacity of 500,000 tpy is scheduled for installation. ●

P&Q's annual aggregates survey

Optimism indicated for 1984 supported by modest 1983 gains

By Sandy Herod

The discussion of various pertinent factors in the sand and gravel, crushed stone, and lightweight aggregate industries presented in this section is based entirely on information provided by respondents to our latest annual year-end survey (28th) of *Pit & Quarry* readers.

Production levels noted by national aggregate association leaders in a preceding section of this review usually will be somewhat higher than those indicated here. This is due to the fact that our annual aggregates survey is just that—it is directed only to aggregate producers and does not include tonnages of sand and gravel or crushed stone used in the manufacture of cement, lime, agricultural applications, glassmaking, foundries or as raw material in any other industrial application. Other sections of the review deal with cement, lime, and agstone/aglime.

Although production levels are the most obvious indicators of economic health of these industries, other factors that may contribute to or detract from that health must be considered. Accordingly, information on such major cost centers as labor, maintenance, and energy is requested.

Our survey questionnaires also ask producers to indicate probable prospects for their business during the coming year, and this information is complemented by replies to questions concerning plans for new plants, expansion programs, or equipment replacement.

All the above factors are summarized in the accompanying table. On factors such as production volume, the producers could furnish only an estimate for the full 12 months since their questionnaires were received early in the fourth quarter of 1983.

The information provided by each individual respondent never is identifiable of itself; it becomes part of the total data received from each geographical region. The regional tabulations then are combined in recapping the information to provide a national pattern. For some factors, weighted national averages are presented.

The survey conducted a year ago indicated that the aggregate industries had experienced another production drop in 1982 that was on the order of 11%. This is borne out by the latest Bureau of Mines reports on that year for various types of aggregate materials.

The 1982 combined total of all standard weight aggregates—sand and gravel, crushed stone and slag—amounted to some 1.21 billion tons* as compared to the 1.36 billion of the preceding year; and the combined output of all lightweight aggregates amounted to about 6.6 million tons as compared to approximately 6.9 million in 1981 (These figures also reflect some changes in Bureau of Mines procedures for reporting commodity volumes).

Our 1983 survey respondents were able to depict a brighter picture. Their responses, combined to a national total, indicate that the tonnage of sand and gravel and crushed stone produced was 5% higher—the first improvement in several years. However, slag aggregate production dropped, paralleling the situation in the iron and steel industry, the source of its raw material.

Production of lightweight aggregates, which had not dropped by as high a percentage as standard materials in 1982, also showed a somewhat smaller increase during the past year—about 3%.

In projecting our respondents' 1983 data from the base of Bureau of Mines reports for 1982, it appears that output of sand and gravel last year rose about 5% to approximately 660 million tons; crushed stone production gained at the same rate to about 588 million tons; and lightweight aggregate output of some 6.8 million tons was 3% higher.

Last year, our review showed that a surprising number of respondents to our 1982 survey, considing the prevailing economy, were optimistic regarding prospects for 1983. Obviously, some small changes here and there in various economic factors accumulated to create a situation in which a somewhat higher volume of construction materials were required.

Summary of Pit & Quarry's 1983 Aggregates Industry Survey*

	Sand & Gravel	Crushed Stone	Lightweight Aggregates
Review of 1983			
Production reported (+ or − vs. 1982)	+9%	+14%	+½%
Prices			
raised (% of replies)	37%	52%	35%
average % raised (weighted)	7%	7%	4%
Wages			
raised (% of replies)	77%	92%	94%
average % raised (weighted)	4%	4%	4%
Maintenance costs			
up (% of replies)	66%	64%	71%
% of increase (weighted)	11%	13%	6%
Fuel/energy costs			
up (% of replies)	66%	58%	59%
% of increase (weighted)	7%	9%	12%
Productivity (T/Mnhr)	+9%	+7%	+11%
Outlook for 1984			
Expecting gain (% of replies)	70%	71%	53%
% gain expected (weighted)	13%	12%	12%
Expecting decrease (% of replies)	3%	6%	0
% decrease expected (weighted)	15%	11%	0
No change (% of replies)	25%	19%	29%
Unsure (% of replies)	1%	4%	12%
Plans reported (% of replies)			
New Plants	11%	11%	6%
Expansions	23%	33%	35%
Replacement equipment only	23%	27%	12%

**Does not include processed slags.*

Our 1983 survey shows the majority of respondents in each aggregate group looking for further improvement during the coming year, and at almost the same rate for each group. Adding significance to that picture is the fact that an impressively low number of producers indicate the expectation of a decline in business during 1984.

The discussion of our aggregates survey data for each group is followed by short reviews of a number of other major nonmetals industries. These include lime, agstone, gypsum, phosphate rock, potash, barite, feldspar, talc, and fluorspar for which the latest government figures available are presented.

Sand and gravel

The respondents to our 1982 survey, for which results were published last January, furnished figures pointing to a 16% drop in production. Apparently the decline was on the order of 13%, when measured against the government's 1981 final figure, and output was about 629 million tons.

Our recently completed 1983 canvass, incorporating estimates for fourth quarter production, indicates that the optimism a year ago, on the part of about one third of that group of respondents, had some merit. Figures submitted indicate that output during the year rose about 5% to the level of some 660 million tons—the first reversal of the record of steady annual drops since 1978.

As the accompanying table shows, the number of producers optimistic about business in 1984 is substantial—more than twice those of a year ago. However, the weighted average gain they expect seems, as was the case a year ago, somewhat high.

At the same time, the table also shows that the economic benefits of higher production with an upward adjustment to prices were impacted negatively by higher rates of increase in major cost centers.

Among the major cost factors, wage rates rose at a lower rate than in the previous year. For the first time in several years, fuel/energy costs also rose at a slower pace. The annual percent of increase in maintenance expense showed little change this past year; again, it was on the order of 11%.

Crushers, screens, wheel loaders, and parts service, in that order, were at the top of the list of maintenance problem areas reported by the survey respondents.

Outlook: The comparison of the number of respondents expressing expectation for improvement during the coming year with those displaying optimism for 1983 a year ago is startling. The latter group represented about 30%, whereas our latest survey shows 70% of the replies expressing the opinion that further improvement will be enjoyed during 1984.

The pessimists definitely were in the minority; only 3% of our total response looked for a drop in the coming months. Another 25% feel their present level of business will remain unchanged.

Considering the increase in physical construction volume of 4-5% during 1983, and the projection of a comparable rate for the coming year, the output of sand and gravel aggregates could reach the level of about 690 million tons in 1984.

Crushed stone

The report on our 1982 survey presented last January carried the estimate of about a 7% drop in the production of crushed stone aggregates. It now appears the decrease was slightly higher, about 8½%, and output was on the order of 560 million tons (that figure is an extension of the final Bureau of Mines report for 1981, and represents 70% of the total as construction aggregates).

The picture that developed in assembling the replies to our latest survey points, for the first time since the late '70s, to a change in direction. The total of production reported by our respondents for 1983 (estimates used for the fourth quarter) represented an increase of better than 5%. Applying this to the Bureau of Mines 1981 figure as a base, total crushed stone aggregate production last year would be on the order of 588 million tons.

Although some 40% of the responding quarrymen last year looked for improved business in 1983, their numbers have swelled in our latest survey to 71% who look for further gain in 1984.

Although the 1983 production picture was more favorable, the situation with respect to primary cost centers was less so. Maintenance expenses rose again, and at a slightly higher rate than the preceding year; both fuel/energy and wage costs increased, although at a lower percentage than reported for 1982. Fortunately, productivity was reported at a higher level.

Mobile equipment—loaders and haulers—were top-ranked as the most troublesome areas in maintenance—but were closely followed by considerable discontent with parts availability and service.

Outlook: As shown in our summary table, 71% of the quarrymen answering our survey expressed optimism about the coming year; and another 19% expect no change in 1984 from the level of business in 1983. That leaves a very definite minority expressing pessimism or uncertainty for the coming months.

With expectations that the increase in physical volume of construction put in place last year—about 5%—will be paralleled at about the same rate during 1984, the output of crushed stone aggregates this year could total nearly 620 million tons.

Lightweight aggregates

Information received from our survey a year ago of industry performance in 1982, complemented by the then latest Bureau of Mines reports on various lightweight materials, confirmed the anticipated drop from the previous year. The decrease was estimated to be 2% with resultant production volume down to 9.1 million tons.

Our latest survey (comparing 1983 with 1982), plus revised government data, indicate that lightweight volume in 1982 was down 4% to approximately 6.6 million tons. The appreciable difference in volume is due to the fact that the Bureau of Mines no longer includes pumicite and scoria in its statistics on pumice, considered here as a lightweight material.

The full year estimates for 1983, recently received from our survey respondents, indicate a small increase in volume last year, on the order of 1%, for a total of about 6.8 million tons.

The 1983 returns show that, nationally, nearly 40% of production is marketed to the concrete masonry industry, and most of the remainder to ready-mix and lightweight precast concrete manufacture. Prices for lightweight materials were raised 4% on a national average, a good bit less than the increases reported by standard weight aggregate producers.

Although a larger number of producers reported a climb in maintenance costs, the average was less than for the other aggregate categories. However, owing to the processing methods involved in most lightweight aggregate production, average fuel/energy costs reported were as much as 30% higher than for the other aggregates.

Outlook: The percentage of survey replies indicating optimism about prospects for 1984 was (at 53%) almost identical to that reported a year ago. Another 29% felt there would be no change from 1983 conditions. No one expressed expectations of a decline.

Taking the 4-5% increase in physical volume projected by construction market observers, it appears reasonable to expect an increase in output of lightweight aggregates this year, to the level of about 7 million tons.

Slags

Since the volume of iron and steel slags processed depends directly upon current production of iron and steel furnaces (most workable banks of blast furnace slag now having been depleted), economic conditions affecting iron/steel output are reflected promptly in the amount of raw material available to slag processors.

The latest final annual figures from the Bureau of Mines, covering 1981, show a total of 21.5 million tons of processed iron and steel slags—a decline of nearly 15%. Of the total, expanded iron slag accounted for 800,000 tons. That quantity was 31% less than the previous year.

The decline in volume of processed slag aggregates continued through 1982 and 1983 to the point where estimated production last year is on the order of 16 million tons. With an improvement in iron and steel production anticipated, it is expected that processed slags will record a modest gain during 1984, possibly reaching the level of 17 million tons. ●

Other major nonmetals

By Sid Levine

Agstone/aglime

Agricultural limestone sold or used by producers in the United States in 1982 amounted to 23.24 million short tons, compared with 29.65 million tons in 1981 and 34.40 million tons in 1980. Production values were $123.6 million in 1981 and $130.3 million in 1980 (data for 1982 was not available). Lime sold or used for agriculture totaled 47,000 tons (valued at $2.54 million) in 1982 and 74,000 tons (valued at $3.60 million) in 1981.

Barite

Domestic production of primary barite totaled 1.845 million short tons (valued at $69.52 million) in 1982, compared with 2.849 million tons (valued at $102.44 million) in 1981 and 2.245 million tons (valued at $65.96 million) in 1980. Imports of crude barite for consumption amounted to 2,320 million tons in 1982, 1.932 million tons in 1981, and 1.850 million tons in 1980.

Crushed and ground barite sold or used by processors amounted to 4.09 million tons (valued at $322.7 million) in 1982; 4.72 million tons (valued at $406.3 million) in 1981; and 3.65 million tons (valued at $365.6 million) in 1980. The principal use for barite, as a weighting agent in oil-and gas-well drilling fluids (muds), accounted for 98% of U.S. consumption in 1982. Barium chemical manufacture, fillers, and extenders used the other 2%.

Feldspar

Total U.S. feldspar output in 1982, including soda, potash, and mixed varieties, amounted to 615,000 short tons (valued at $20.30 million). Production in 1981 and 1980 totaled 665,000 tons (valued at $21 million) and 710,000 tons (valued at $23.2 million), respectively. The 1982 end-use distribution of feldspar in the United States indicated that 55% went into glass making and 41% into pottery. The remaining 4% was used in applications such as enamels and sanitary ware.

Fluorspar

Domestic production of fluorspar amounted to 199,714 short tons in 1982, a drop of 52% from the 415,862 tons in 1981. The United States continued to depend on foreign sources to supply more than 85% of its fluorspar requirements. Imports for consumption totaled 543,723 tons in 1982 and 826,783 tons in 1981. Shipments of finished fluorspar from domestic mining operations amounted to 77,017 tons (valued at $13.293 million) in 1982, compared with 115,404 tons (valued at $18.412 million) in 1981.

Reported domestic consumption of fluorspar in 1982 amounted to 530,565 tons, with the following percentage end-uses or products: Hydrofluoric acid, 58.7%; glass and fiberglass, 1.1%; enamel and pottery, .2%; welding rod coatings, .4%; primary aluminum and magnesium, .1%; iron and steel castings, 2%; open hearth furnaces, 5.7%; basic oxygen furnaces, 24.1%; electric furnaces, 7.5%; other, .2%.

Gypsum

In 1982, U.S. producers mined 10.6 million short tons of crude gypsum (valued at $89.13 million), compared with 11.5 million tons (valued at $98.1 million) in 1981. Crude gypsum imports amounted to 6.7 million tons in 1982 and 7.6 million tons in 1981. Byproduct gypsum quantities were 697,000 tons in 1982 and 696,000 tons in 1981. Calcined gypsum production amounted to 11.3 million tons (valued at $196.49 million) in 1982, compared with 11.7 million

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United States Gypsum's new 1,100 tpd lime plant in New Braunfels, Texas supplies high calcium and dolomitic lime to south and southwestern markets.

tons (valued at $243.1 million) in 1981.

Lime

Lime production in 1982 amounted to 14.1 million short tons (valued at $696.2 million), compared with 18.9 million tons (valued at $884.2 million) in 1981. Record lime output was 21.6 million tons in 1974. In 1982, quicklime accounted for 83% of total lime production, hydrated lime for 15%, and dead-burned dolomite for 2%. Commercial (open market) sales of lime used 77% of total 1982 production.

End-use sales groups in 1982 were: chemical and industrial uses, 87%; construction, 10%; refractories, 3%; and agriculture, less than 1%. Leading individual uses for lime in 1982 were for BOF steel, water purification, paper and pulp, sulfur removal from stack gases, electric steel, and sugar refining. These uses accounted for 61% of total lime consumption.

Phosphate rock

Mine production of phosphate rock in the United States amounted to 104.14 million metric tons in 1982 and 183.73 million metric tons in 1981. Marketable production totaled 37.42 million m.t. (valued at $950.33 million) in 1982 and 53.63 million m.t. (valued at $1,437,99 million) in 1981. Phosphate rock sold or used by producers in the United States amounted to 38.571 million m.t. (valued at $983.47 million) in 1982 and 45.526 million m.t. (valued at $1,212.43 million) in 1981. Phosphate rock sold or used by producers totaled 28.729 million m.t. in 1982 for the following uses: Wet-process phosphoric acid, 84.32%; normal superphosphate, .35%; triple superphosphate, 3.05%; defluorinated rock, .64%; direct applications, .21%; elemental phosphorus, 11.34%; and ferrophosphorus, .09%.

Potash

Marketable production of potash in the United States was estimated at 1.750 million metric tons K_2O equivalent in 1982, compared with 2.156 million m.t. K_2O equivalent in 1981. The value of U.S. production of the marketable potash was estimated to be about $250 million in 1982, compared with $329 million in 1981. Imports for consumption amounted to an estimated 4.8 million metric tons K_2O equivalent in 1982 and in 1981. Potash sold or used in the United States in 1981 amounted to 1.908 million m.t. K_2O equivalent for the following uses: muriate of potash (60% K_2O equivalent minimum) for standard, coarse, granular, and chemical grades, 68.8%; potassium sulfate, 9.4%; other uses including soluble muriate, manure sales, and potassium magnesium sulfate, 21.8%.

Talc and pyrophyllite

Mine production of talc and pyrophyllite was estimated at 1.060 million short tons in 1982, compared with 1.343 million tons in 1981. The amount sold by U.S. producers totaled an estimated .970 million tons in 1982 and 1.221 million tons in 1981. Sales values were $26.8 million in 1982 and $31.5 million in 1981. End uses for the .970 million tons used in 1982 were: ceramics, 35.54%; cosmetics, 6.89%; insecticides, 3.86%; paint, 19.01%; paper, 8.08%; plastics, 10.19%; refractories, 3.76%; roofing, 3.21%; rubber, 3.31%; other, 6.15%. ●

INTERNATIONAL CEMENT scene:

Plant and production update

By Sid Levine

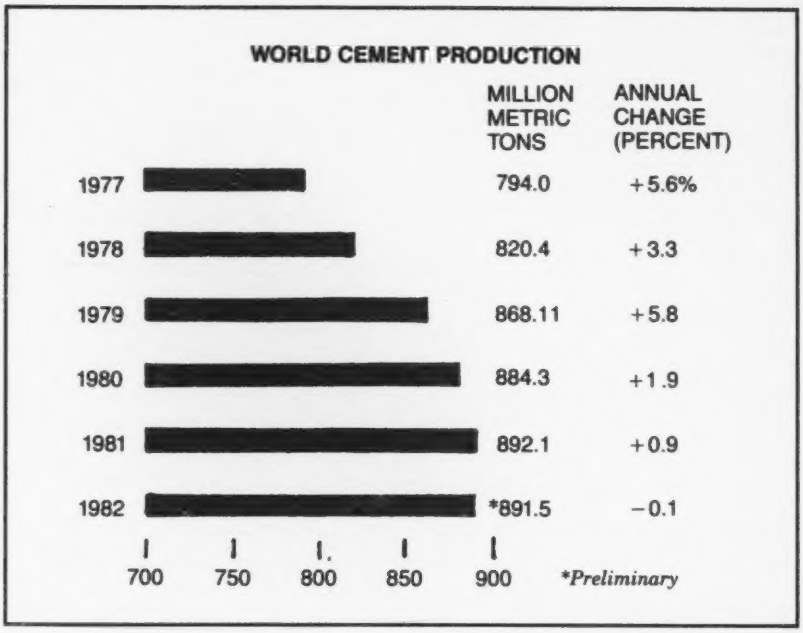
Global cement production declined slightly in 1982. The general drop in world construction activity in the past 2 years points to a greater reduction in cement output for 1983 and 1984. The 892.1 million metric tons of cement production in 1981 was a record level.

The worldwide situation was described in the 1982 annual report of Holderbank Management and Consulting Ltd. (Switzerland): "Global cement consumption declined in 1982 to an estimated 830 (1981: 878) million tons. . . . The statistics show that with weaker overall demand, the decline in consumption has been massive, especially in the western industrial nations. All countries in Western Europe, with the exception of Spain, registered consumption decreases in addition to the significant contraction experienced in North America. Latin America presented a mixed picture, with sharp reduction in consumption in certain sections of some relatively small countries contrasting with more or less unchanged volumes in the other nations on that continent. In the Pacific area, the year 1982 was marked by a rise in the demand for cement."

The effect on the value of cement was noted in the 1982 annual report of Heracles General Cement Co. (Greece): "World cement prices in dollars fell sharply during the year, and unfortunately the downward trend is continuing. It started when the market was flooded with offers for cement from Western European and Far Eastern countries (which was surplus to their own requirements because of the recession) and cement being sold abroad by East Europeans and Turkey to boost their currency earnings. Further reasons for the decline of dollar prices were the devaluation of most currencies against the dollar, the low level of freight rates, and the decrease in energy costs (due partly to falling oil prices and partly to the substitution of coal for oil)."

Projected commissioning dates for new cement plants and plant extensions, and a list of projects placed onstream in 1982 and 1983 are given in this annual *Pit and Quarry* report. Very few projects have been planned in the past 2 years. The drop in the number of cement plants and extensions ordered on a world scale has fallen drastically. This has been attributed particularly to the sharp decline in investment by the oil exporting countries. Cement production data for the 1980-1982 period for the various countries also are listed in this report.

England—Ribblesdale Cement Co. Ltd., Lancashire: New 2,300 mtpd F.L. Smidth preheater/precalciner kiln commissioned in 1982. ***(Courtesy: F.L. Smidth & Co., Inc.)***



The 20 biggest cement-producing countries in the world

	Production in million metric tons		
	1980	1981	1982 (est.)
U.S.S.R.	125.1	127.2	124.0
China	79.9	84.0	94.4
Japan	88.0	84.8	84.0
U.S.A.	66.4	62.6	57.5
Italy	41.8	41.6	42.0
West Germany	35.6	33.0	32.0
Spain	28.0	28.8	29.0
France	29.1	28.2	26.1
Brazil	27.2	28.5	25.4
India	17.7	20.8	22.5
Mexico	16.3	18.1	18.0
South Korea	15.6	15.6	17.9
Poland	18.4	14.2	16.0
Turkey	12.9	15.0	15.1
Romania	15.6	14.8	15.0
Greece	13.2	13.5	13.5
Taiwan	14.1	14.3	13.4
United Kingdom	15.1	12.7	13.0
East Germany	12.4	12.5	12.5
Czechoslovakia	10.6	10.7	10.3

AFRICA

Algeria

Prodcn.	1980	1981	1982
	4.000	4.200	4.20

Cement plants are state-owned under departmental jurisdiction of Societe Nationale des Materiaux de Construction.

- Bouira: F.L. Smidth & Co., Denmark, and F.L. Smidth & Cie., France, will supply a turnkey cement plant with a 1 million tpy capacity. The plant will be located near Sour-El-Grhozlane in the Bouira district, about 140 km southeast of Algiers. Scheduled operation: 1983. Consulting engineers: Cimenteries CBR (Belgium).
- Ain Touta: New 1 million-tpy plant to be built by F.L. Smidth on turnkey basis.

Angola

Prodcn.	1980	1981	1982
	0.240	0.240	0.25

Benin

Prodcn.	1980	1981	1982
	—	—	0.50

- Societe des Ciments d'Onigbolo, Onigbolo: Two neighboring West African states, the People's Republic of Benin and the Federal Republic of Nigeria, have jointly awarded F.L. Smidth & Co. A/S a contract for the construction of a cement plant with a capacity of 500,000 tpy. The dry process plant includes a Tirax raw mill, 4.6mm ×8.25m, with a 4.4m drying chamber; a 1,600-tpd oil-fired four-stage preheater Unax kiln, 4.55 ×

68m, and a Unidan cement mill, 3.8 × 12m. Onstream: 1982.

Cameroun

	1980	1981	1982
Prodcn.	0.227	0.272	0.27

- Cimenteries du Cameroun, Figuil: Expanding from 70,000 tpy to 100,000 tpy. Scheduled onstream: 1982.

Congo Republic

	1980	1981	1982
Prodcn.	—	0.080	0.12

- Cimenterie Domaniale de Loutete, Loutete: Expanding grinding operation from 80,000 to 120,000 mtpy. Commiss.: 1983. Princ. equip. (by KHD Humboldt Wedag). Consultant: Prospective Engineering Gestion, Switzerland.

Egypt, Arab Republic of

	1980	1981	1982
Prodcn.	3.028	3.547	4.26

- Helwan Portland Cement Co. (Helwan): Consortium, formed by F.L. Smidth & Co. (Denmark) and Brown, Boveri & Co. (Switzerland), awarded contract by company to convert two existing wet process production lines to dry process. Both lines will incorporate F.L. Smidth precalcining systems with 4,500-mtpd four-stage preheater kilns. Capacity: 3 million mtpy. Scheduled onstream: 1982.
- Helwan Portland Cement Corp. (Assiut): A 1.5 million-mtpy plant is being built by a European consortium headed by Polysius. Equipment will include: four-stage Dopol heat exchanger; Prepol AS precalciner; rotary kiln; two raw-mix grinding mills with a capacity of 210 mtph each; two cement-grinding mills, each rated at 83 mtph; raw materials handling and dressing plant; mixing beds for limestone and clay; raw mix homogenizing plant; clinker handling systems. Commiss.: 1982. Consultants: Arab Swiss Engineering Co.
- Helwan Portland Cement Co., Naga Hammadi (100 km northwest of Luxor): New plant consisting of two 3,700 tpd KHD Humboldt Wedag Pyroclon system pyroprocessing lines. Units will include 67 × 4.8m rotary kilns equipped with preheater units and 52 × 6m tubular coolers.
- National Company for the Production of Cement, El-Tabbin (30 km south of Cairo): Adding 4,500-tpd production line. Major equipment suppliers are KHD Humboldt Wedag and CGEE Alsthon S.A. Clinker will be produced in a 76m long × 5m diameter rotary kiln with a twin-type preheater and an additional inline firing arrangement. Scheduled onstream: 1984. Dyckerhoff Cementwerke supplying consulting services.
- Suez Cement Co., Eastern plant, south of Suez City at Beer Odeib: Building new 1 million-mtpy plant. Fuller Company supplying equipment, including 15 × 42-ft. raw mill; SF-141 preheater with flash calciner; 15 × 16 × 240-ft. rotary kiln; two 15 × 46-ft. finish mills; grate clinker cooler; blending and raw storage silos; Fuller-Kinyon systems; dust collectors; and fluidizing gravity conveying systems. Ferguson International Co. is project manager and consultant.
- Suez Cement Co., Quattamia cement plant: New 1.4 million-mtpy plant is scheduled to be commissioned in 1984. Polysius is supplying major equipment, including two 13.8 × 42.7-ft. double rotator raw mills; one Prepol precalciner kiln rated at 4,950 mtpd; two two-compartment 15.1 × 50.9-ft. cement mills; and two homogenizing silos.
- Tourah Portland Cement Co., Lecaire (Tourah): Adding 2,000-mtpd F.L. Smidth dry process kiln equipped with cyclone preheater and a precalciner. Onstream: 1982.

Ethiopia

	1980	1981	1982
Prodcn.	0.110	0.140	0.16

- Ethiopian Building Materials Corp., Mugher: New 300,000 mtpy plant under construction. Scheduled onstream in 1983. Consulting engineers: Cimenteries CBR (Belgium).

Gabon

	1980	1981	1982
Prodcn.	0.110	0.150	0.17

Ghana

	1980	1981	1982
Prodcn.	0.240	0.401	0.40

Guinea, Republic of

	1980	1981	1982
Prodcn.	—	—	n.a.

- Conakry: Contract awarded to Lafarge Conseils et Etudes for supervision of construction of clinker grinding plant in Conakry. Capacity: 250,000 mtpy. The project is sponsored by the government of the Republic of Guinea, represented by the Estate Committee for Cooperation with the countries of the Arab League (Ministry of Planning and Cooperation). Prospective Engineering Gestion was consulting engineer.
- Cement plant construction scheduled to start in 1982 at Sougueta (about 200 km north of Conakry). Prospective Engineering Gestion is consultant.

Ivory Coast

	1980	1981	1982
Prodcn.	0.900	n.a.	n.a.

Kenya

	1980	1981	1982
Prodcn.	1.272	1.297	1.30

Lebanon

	1980	1981	1982
Prodcn.	2.200	2.391	2.00

- Societe des Ciments Libanais, Chekka: Conversion of two production lines from wet to dry process, increasing kiln capacity from 1,500 to 3,000 mtpd each. Adding two 140-mtph roller mills for raw meal grinding. Commiss.: n.a. Consulting engineer: Holderbank Management and Consulting Ltd.

Libya (Libyan Arab Republic)

	1980	1981	1982
Prodcn.	3.200	3.200	3.99

- Secretariat of Heavy Industries planning 1 million-mtpy plant at Juffrah or Wadi-Shati. Consulting engineers: The Kuljian Corp. (U.S.A.) and Develop-

Quantities in million metric tons, except where noted.
1 tonne = 1 metric ton = 1.10231 short tons
Prodcn. = million metric tons per year (mtpy)
Commiss.: = commissioned or to be commissioned
Princ. equip. = principal equipment
n.a. = not available at time of writing
(Note: 1982 production data is preliminary)

ment Consultants International Ltd. (Hong Kong).

• El Fataiah Cement plant, being built at Derna by the Heavy Industries Secretariate, Tripoli, should start production in early 1983. The 1 million-tpy plant consists of two identical production lines with kilns of 1,600 tpd capacity each. Mitsubishi Heavy Industries, Japan, has been engaged as general contractor. Consultants: Holderbank Management and Consulting, Ltd.

• A 1 million-mtpy plant has been proposed near Sebha in the southwest of Libya.

Madagascar, Democratic Republic of

	1980	1981	1982
Prodcn.	0.060	0.064	0.07

• E.S. Cement d'Antsirabe (Ibity, Province of Antsirabe): Contract awarded to Loesche GmbH for construction of new vertical kiln cement plant rated at 115,000 mtpy. Scheduled onstream: 1982.

Malawi

	1980	1981	1982
Prodcn.	0.092	0.078	0.08

Mali

	1980	1981	1982
Prodcn.	0.020	0.020	0.02

• The government of the Republic of Mali is building a second cement plant with a capacity of 260,000 tpy at Diamou (400 km west of the capital, Bamako). Clinker grinding station will be built at Bamako. Clinker will be transported by rail from Diamou to Bamako. Plant is scheduled to go onstream in mid-1984. Prospective Engineering Gestion (Switzerland) is handling engineering and project management.

Morocco

	1980	1981	1982
Prodcn.	3.552	3.602	3.602

• Cimenterie Nouvelle de Caseblanca: Lafarge Conseils et Etudes are consulting engineers for 1.2 million-mtpy dry process plant scheduled for 1983 operation near Bouskoura. Fives-Cail Babcock is the turnkey contractor.

• Societe Ciments Artificiel de Meknes, Cadem: Conversion from wet to dry process, and expansion from 1,000 mtpd to 1,500 mtpd. Princ. equip.: by Fives-Cail Babcock.

Mozambique

	1980	1981	1982
Prodcn.	0.275	0.375	0.45

Niger

	1980	1981	1982
Prodcn.	0.041	0.037	0.04

• Malbaza-Societe Nigerienne de Cement: Lafarge Conseils et Etudes is consultant for 300,000 mtpy plant expansion incorporating a dry process preheater system. Startup is scheduled for 1983.

Nigeria

	1980	1981	1982
Prodcn.	2.000	2.540	2.54

• Cement company of Northern Nigeria, Kalambaina, Sokoto: A German-Swedish consortium consisting of O&K Orenstein & Koppel AG, Michael Thomas & Partner KG, and Cementa AB, Malmoe, has received an order for the refurbishment and extension of the Sokoto cement works. The expanded plant will be rated at 600,000 mtpy.

Reunion

	1980	1981	1982
Prodcn.	0.145	n.a.	n.a.

Senegal

	1980	1981	1982
Prodcn.	0.387	0.387	0.36

Somalia, Republic of

	1980	1981	1982
Prodcn.	—	—	n.a.

• Berbera cement plant: Conversion of plant to 200,000 mtpy dry process. Commiss.: 1983. Princ. equip: (by Creusot Loire Enterprises). Consultants: Lafarge Conseils et Etudes.

South Africa, Republic of

	1980	1981	1982
Prodcn.	7.200	7.983	7.98

• Anglo-Alpha, Ltd., Sandton RSA: New 4,000-mtpd production line at ULCO Works. Commiss.: 1984. Princ. equip. (by Polysius): 15 × 230-ft. Dopol kiln with Prepos-AS precalciner and grate cooler. Technical consultants: Holderbank.

• Anglo-Alpha, Ltd., Natal Simuma: New 1,450-mtpd plant. Commiss.: 1983. Princ. equip. (by F.L. Smidth). Consultants: Holderbank Management and Consulting, Ltd. Project management: Anglo-Alpha Technical Services.

• Blue Circle Cement, Lichtenburg: Extension is adding one Polysius Prepol precalciner/Dopol kiln plant. Kiln is a 14 × 207-ft. unit rated at 1,430 mtpd. Scheduled onstream in 1983.

Sudan

	1980	1981	1982
Prodcn.	0.185	0.122	0.20

• Maspio Cement Corp.: Expanding Atbara plant. Princ. equip. (by F.L. Smidth): one 750-tpd rotary kiln, 15 × 12½ × 329 ft., with single-stage cyclone preheater and Unax planetary cooler; 10½ × 30-ft. raw mill; 11 × 36-ft. finish mill. Scheduled onstream in 1982.

Tanzania

	1980	1981	1982
Prodcn.	1.100	1.202	1.20

• Tanzania Saruji Corp.: Awarded contract to F.L. Smidth to supply equipment for new 800-tpd plant at Mbeya in southwestern Tanzania. Major equipment includes 4 × 6m, 1250 kW raw mill; 3.95 × 58m, 800-mtpd rotary kiln equipped with a four-stage cyclone preheater and Unax planetary cooler; 3.4 × 12m, 1820 kW finish mill. Scheduled onstream in 1982. Consultants: The Kuljian Co. (U.S.A.) and Development Consultants Pvt. Ltd.

Togo (see also W. Africa)

	1980	1981	1982
Prodcn.	0.655	n.a.	n.a.

• Ciments du Togo, Lome, Togo: Extending capacity of clinker grinding plant from 250,000 mtpy to 400,000 mtpy. Scheduled for completion in 1982. Consulting engineers: Prospective Engineering Gestion.

Tunisia

	1980	1981	1982
Prodcn.	1.780	2.001	2.00

• Societe des Ciments de Jebel el Quest: New 3,300-mtpd clinker plant to be built in Bir M'Cherga (30 miles south of Tunis). Polysius S.A. (France) has turnkey order which will include a Prepol-AS precalciner; air-swept grinding plant for raw meal; two two-compartment cement grinding mills; and Polab laboratory automation. Commiss.: 1985.

• Societe des Industries Cimentieres du Centre (SICC) has signed a contract with Holderbank Management and Consulting Ltd. for the engineering and project management of a cement plant to be built near Enfida (100 km east of Tunis). The plant will be rated at 1 million tpy. Production was slated for 1983 startup. Equipment will be supplied by Kawasaki Heavy Industries in cooperation with C. Itoh & Co. and Marubeni Corp. Pyroprocessing unit will include a Kawasaki suspension preheater.

• Societe des Ciments Tunisiens: Planning 1 million-mtpy dry process plant in the Tunis area at Djebel Oust. Scheduled for 1983 operation. Consulting engineers: Lafarge Conseils et Etudes.

• Societe Tunisienne de Ciment Blanc: White cement works, rated for 100,000 mtpy. Scheduled for 1984 operation. Consulting engineers: Lafarge Conseils et Etudes.

Uganda

Prodcn.	1980	1981	1982
	0.010	0.020	0.30

• Uganda Cement Corp., Hima (near Zaire border): Added 600-tpd production line. Contract awarded to Humboldt Wedag. Dry process, using a preheater, 50 × 3.6m rotary kiln and a grate cooler.

West Africa (Togo, Ghana, & Ivory Coast)

Prodcn.	1980	1981	1982
	—	—	n.a.

• Ciment de l'Afrique de l'Quest (CIMAQ), Tabligo, Togo: Company formed by the West African governments of Togo, Ghana, and Ivory Coast to build a 1.2 million-mtpy cement plant near Tabligo. Blue Circle Group (Great Britain) has contract for engineering services. Polysius supplied major equipment including two Prepol precalciner kilns, each rated at 2,100-mtpd clinker. Onstream in 1982.

Zaire

Prodcn.	1980	1981	1982
	0.407	0.399	0.40

Zambia

Prodcn.	1980	1981	1982
	0.160	0.140	0.15

Zimbabwe

Prodcn.	1980	1981	1982
	0.399	0.399	0.399

ASIA

Afghanistan

Prodcn.	1980	1981	1982
	0.050	0.059	0.06

Bangladesh

Prodcn.	1980	1981	1982
	0.336	0.345	0.33

Burma

Prodcn.	1980	1981	1982
	0.367	0.381	0.31

• Ceramic Industries Corp.: New 840-mtpd suspension preheater/rotary kiln plant at Pa-An. Princ. equip. (by Fives-Cail Babcock). Commiss.: 1983.

China, People's Republic of

Prodcn.	1980	1981	1982
	79.861	84.006	94.35

• China National Technical Import Corp., Jidong: New 1.2 million-mtpy plant. Princ. equip. (by IHI): 4,000-mtpd, 4.7 × 74m rotary kiln with IHI-NSF coal-fired precalciner, four-stage preheater and grate cooler; 2-3,850 kW, 4.5 × 13.9m raw mills; 2-4,200 kW, 4.5 × 15.1m cement mills. Commiss.: 1983.

• Guangxi Building Materials Export Supply Corp., Liuzhou: Expansion adding 3,200 mtpd capacity. Princ. equip. (by F.L. Smidth): 4.5 × 68m precalciner kiln with Folax grate cooler; two cement mills.

• Anhui Province: New 4,000-mtpd coal-fired plant. Princ. equip.: (by Mitsubishi Heavy Industries Ltd., Mitsubishi Mining and Cement Co., Ltd., and Meiwa Trading Co., Ltd.). Commiss.: 1984.

• Shenzhen Special Economic Zone: New 200,000-mtpd plant. Princ. equip.: (by Mitsui Mining Co. (Japan) and Togen Ltd. (Japan)).

Hong Kong

Prodcn.	1980	1981	1982
	1.489	1.506	1.40

• China Cement Co., Castle Peak (New Territories): New 1.5 million-mpty plant. Princ. equip.: Allis-Chalmers 4.87 × 76.2m rotary kiln with 4600-mtpd reinforced suspension preheater; Polysius 5,250 kW, 308-tph center discharge mill; Claudius-Peters blending silos and kiln feed system; Claudius Peters recuperating grate cooler and twin G-coolers; 3-4, 200 kW, 4.57 × 13.89m Allis-Chalmers finish mills. Consulting eng.: Raymond Kaiser Engineers. Commiss.: 1983.

Saudi Arabia—Southern Province Cement Co., Gizan; New 5,000 mtpd plant, commissioned in 1983, incorporates two 14½ × 210 ft. kilns equipped with preheater/flash calciner systems. ***(Courtesy: Fuller Co.)***

India

Prodcn.	1980	1981	1982
	17.770	20.761	22.50

• Andhra Cement Co., Ltd., Nadikudi (Guntur district of Andhra Pradesh): New 1,200-mtpd dry process plant. Consultants: Techno Craft Engineering.

• Associated Cement Companies, Ltd., The, Wadi Cement Works: Expansion added 1 million mtpy via new Mitsubishi fluidized precalciner kiln system. Commiss.: 1982.

• Associated Cement Companies, Ltd., The, Gagal Cin Himachal Pradesh: New 560,000-mtpy plant. Princ. equip. (by ACC-Vickers-Babcock Ltd.): Mitsubishi fluidized calciner system. Commiss.: 1982.

• Avarpur Cement Association, Chanda: New 3,200-mtpd plant. Princ. equip. (by F.L. Smidth): 4.55 × 68m precalciner kiln with Folax grate cooler; TVM raw grinding plant; electrostatic precipitators.

- Birla Jute Manufacturing Co., Ltd., Patna: Expansion added 2,500 mtpd capacity. Princ. equip. (by F.L. Smidth): Precalcining kiln; raw grinding dept.; raw meal homogenizing plant; coal grinding plant.
- Cement Corp. of India, Ltd., Neemuch (250 miles southwest of New Delhi in the State of Madhya Pradesh): New 3,000-mtpd dry process kiln line. Princ. equip. (by Fuller International): SF-141 preheater with flash calciner; 15 × 220 ft. long rotary kiln; 310-mtph Fuller-Loesche raw material roller mill; Fuller-Loesche coal mill; 231-sq. ft. grate cooler. Commiss.: 1985.
- Century Spinning & Manufacturing Co., Ltd., Manikgarh Cement Div., Chandrapur: New 1 million-mtpy plant. Commiss.: 1984. Princ. equip. (by Fuller Co.): 15 × 220-ft. rotary kiln; SF-141 preheater with flash calciner; Fuller-Loesche roller mill for raw grinding; two 13 ft. 9 in. × 46 ft. 9 in. finish mills; Fuller-Loesche coal mill; and an air-quenching grate cooler.
- Coromandel Fertilizers, Ltd.: New 3,300-mtpd plant located between Hyderabaol and Madras. Princ. equip. (by Krupp Polysius A.G.): Dopol preheater kiln with Prepol-AS precalciner; two roller mills for raw material; one roller mill for coal; two cement mills. Commiss.: 1983.
- Deccan Cements, Ltd., Nalgunda district of Andhra Pradesh: New 200-tpd plant. Commiss.: 1982. Consulting engineers: Holtec Engineers.
- Gwalior Rayon Corp., Ltd., Vicram (about 150 km northwest of Indor, Madhya Pradesh): New 1,800-mtpd plant. Princ. equip. (by KHD Humboldt-Wedag and Central Indian Machinery Mfg. Co.): Pyrodon-preheater with a 3.8 × 50m long rotary kiln.
- Indian Rayon Corp., Ltd. will build a plant in Rayon (about 200 km southeast of Hyderabad). The plant will be rated at 1,500 tpd and will include a 3.8 × 50m rotary kiln equipped with a KHD Humboldt Wedag Pyroclon preheater.
- Jammu and Kashmir Cements, Ltd., Kashmir: New plant includes 300-mtpd, 3 × 40m dry process kiln with planetary-type coolers. Design and engineering services performed by The Kuljian Corp. U.S.A. and Development Consultants International, Ltd.
- Kesoram Industry and Cotton Mills Ltd., Calcutta: Adding 1,800-mtpd production line. Princ. equip. (by Polysius): Dopol rotary kiln with prepol-AS precalciner; 140-mtph raw grinding roller mill; and 103-mtph, 14.5 × 52.5-ft., two compartment finish mill.
- Modi Cement, Ltd., Bhatapara (in Raipur district of Madhya Pradesh): New 3,000-mtpd one-kiln plant. Princ. equip. (by Polysius Consult. Eng.): Blue Circle Industries.
- Mysore Cements, Ltd., Damoh (in State of Madhy Pradesh): New 1,500-mtpd plant. Princ. equip. (by KHD Humboldt Wedag): 3.8 × 50m rotary kiln with five-stage Pyroclon preheater. Commiss.: 1982.
- Narmada Cement Co., Jafarabad: New 3,000-mtpd plant. Commiss.: 1982. Princ. equip. (by Fuller Co.): 15 × 220-ft. rotary kiln; SF-141 flash calciner; 12½ × 45-ft. finish mill; two raw material roller mills; coal roller mill; and grate clinker cooler.
- Raasi Cement Co., Ltd., Wazeerabad (in the Nalgonda district of Andhra Pradesh): New 200,000-mtpy plant. Consultants: Techno Craft Engineering.
- Raymond Cement Works, Patharia, Madhua Pradesh: Extension incorporating 1500/3850-mtpd F.L. Smidth kiln with five-stage calciner string; and 4.2 × 12m cement mill.
- Saurashtra Cement and Chemical Industries, Ltd., Ranavav, Gujarat: Modernization. Princ. equip. (by Fuller): 14 × 200-ft. rotary kiln; SF-135 preheater with flash calciner rated at 2,500 mtpd; Fuller-Loesche raw grinding mill; reciprocating grate cooler. Commiss.: 1984.
- Shree Cement, Beawar: New 1,800-mtpd plant. Princ. equip.: (by F.L. Smidth and Larsen & Toubro, India): 3.95 × 56m precalciner kiln with Folax cooler; Atox raw grinding mill; Atox coal grinding system.
- Shree Digvijay Cement Co. Ltd., Digvijaygram: Conversion of existing wet kiln to a 2500-mtpd precalcining kiln. Princ. equip. (by F.L. Smidth): Cyclone preheater with precalciner; Folax grate cooler; and coal grinding equipment.
- Shri Bhogeshwara Cement and Mineral Industries, Ltd., Kurnool district of Andhra Pradesh: Holtec Engineers will build a small scale, 200 tpd capacity plant scheduled to go onstream in 1982.
- State Industrial Development Corp. of Kerala (south India): Holtec Engineers has been retained by the corporation for the engineering of a new 1,200-mtpd cement plant to be built at Walayar in the Palghat district.
- State Industrial Development of Orissa, India, has retained Holtec Engineers for engineering a proposed 130,000-tpy expansion of its Hira cement plant which has a current capacity of 396,000 tpy. Scheduled for completion in 1982.
- Tadpatri Cements Ltd: New 400,000-tpy plant at Tadpatri. Consultants: Techno Craft Engineering, Ltd. Scheduled onstream in 1984.
- Texmaco, Ltd., Yerranguntla, Andhra Pradesh: Holtec Engineers has been retained for a 1,500-mtpd plant scheduled onstream in 1984.

Indonesia

	1980	1981	1982
Prodcn.	5.822	6.844	7.44

- P.T. Perkasa Agung Utama Indonesia Cement Enterprise: New 4,600-mtpd plant. Commiss.: 1983. Princ. equip. (by KHD Humboldt Wedag and Centunion, Madrid): 5 × 78m rotary kiln; twintype Pyroclon preheater; Humboldt Wedag triple grate cooler.
- P.T. Semen Tonasa (Biringere Cement Complex), Tonasa, South Sulawesi: Extension added 590,000-mtpy dry process production line. Commiss.: 1984. Princ. equip. (by F.L. Smidth and Coutinho, Caro, & Co.): Four-stage cyclone preheater and 4.75 × 75m, 1,900-mtpd rotary kiln; VM 4.4 × 12m cement mill.
- P.T. Semen Andalas Indonesia, Lho Gna, Banda Aceh (northern Sumatra). New 1 million-mtpy plant. Commiss.: 1983. Princ. equip. (by Mitsubishi Corp.): NSP suspension preheater/rotary kiln system. Technical consultants: Blue Circle Industries and Cementia.
- P.T. Semen Cibinong,

Jakarta: Expansion adding 250,000 mtpy capacity. Commiss.: 1984. Consulting engineers: Raymond Kaiser Engineers and Kaiser Cement Corp.

- P.T. Semen Kupang: Awarded contract to Loesche GmbH for the turnkey supply, erection, and operation of a 120,000-tpy vertical cement kiln plant for the Island of Timor.
- P.T. Perkasa Ini Abadi Indonesia Cement: Awarded contract to Polysius SA (France) for two production lines with a total capacity of 3 million tpy. Each plant is rated at 4,750-tpd. The new plant will be located in the district of Begor at Citeureup-Cibinung (45 km southeast of Jakarta). Major equipment to be supplied includes two primary crushers, one secondary crusher, a Poldos feed system, two 5.4 × 78m Dopol kilns, two tube mills for clinker grinding, eight rotary packing machines, programmable control system, and automatic Polab III laboratory automation system. Scheduled onstream in mid-1984.

Iran

Prodcn.	1980	1981	1982
	8.000	8.000	9.50

Iraq

Prodcn.	1980	1981	1982
	5.500	5.600	5.60

- SOIDAC (State Organization of Industrial Design and Construction), Samava, Muthanna Province: KHD Humboldt Wedag will furnish equipment for construction of 2 million-mtpy turnkey plant. Each of two production lines producing 3,200-tpd clinker will be supplied with 6.4m long × 4.4m diameter kilns preceded by Pyroclon preheaters. First production line scheduled to go onstream in 1984.
- SOIDAC, Hit City (180 km west of Baghdad): A 1 million-mtpy plant construction award given to Kawasaki Heavy Industries Ltd. and Marubeni Corp. The Kawasaki suspension preheater system will be used. Lafarge Conseils et Etudes is in charge of construction supervision.
- SOIDAC, Badoosh (26 km to the northwest of Mossoul): New IHI precalciner unit extension that adds 3,200 mtpd is scheduled for 1983 commissioning. Order given to Fives-Cail Babcock.

Israel

Prodcn.	1980	1981	1982
	2.088	2.060	2.00

- Nesher Cement Co., Ltd. is planning a 500,000-tpy plant to be built at Ramle (24 km east of Tel Aviv).

Japan (includes Ryukyv Islands)

Prodcn.	1980	1981	1982
	87.959	84.833	84.01

- Osaka Cement Co., Ltd., Kochi Works: Grate preheater replaced by IHI-NSF precalciner system to boost 5.3 × 100m kiln to 7,500 tpd. Operation started up in 1982.
- Tokuyama Soda Co., Ltd., Nanyo Works: The third kiln (5.7 × 110m) was remodeled into IHI-NSF precalciner system using coal firing. Startup in 1982.

Jordan

Prodcn.	1980	1981	1982
	0.746	0.892	0.80

- Jordan Cement Factories Co., Ltd., Fuheis: Added 3,000-mtpd suspension preheater kiln unit (Kobe Steel/Mitsubishi contract). Commiss.: 1982. Consultant engineers: Holderbank Management and Consulting, Ltd.
- South Cement Co., Ltd., Rashadiya: Mitsubishi Corp. (with Kobe Steel, Ltd. as prime subcontractor) has turnkey contract for new 2 million-mtpy plant. Raymond Kaiser Engineers provided precontract engineering and are consultants through plant startup which is scheduled for February 1984 (first line) and August 1984 (second line). Equipment includes two 250-tph Pfeiffer roller mills; two 3,200-tpd suspension preheaters with DD precalciners of Nihon Cement/Kobe Steel design with 4.6 × 72m rotary kilns and reciprocating grate clinker coolers; four 3,300 kW Kobe/A-C Compeb finish mills.
- Arab Company for White Cement Industry, Khaldiya: New 300-tpd white cement plant scheduled for 1983 operation. Contractor: B.K.M.I. Industrieanlagen GmbH, W. Germany. Consulting engineers: Basse Sambre-E.R.I.

Korea, (North), Democratic Peoples Republic

Prodcn.	1980	1981	1982
	8.000	7.983	7.98

Korea, (South), Republic of

Prodcn.	1980	1981	1982
	15.631	15.617	17.89

- Union Corp.: New 300-mtpd white cement plant to be located at site 200 km southwest of Seoul. Princ. equip. (by F.L. Smidth): 3.45 × 60m rotary kiln with two-stage cyclone preheater; Unax cooler and heat exchanger; Tirax raw mill; and a Unidan cement mill. Commiss.: 1982.
- Tong Yang Cement (Seoul) has started an expansion program for its Sam Chok plant. Fuller Co. is supplying equipment, including 48 × 60-in. jaw crusher; 42-in. gyratory crusher; two 10 × 70-ft. rotary dryers; two 13 × 45-ft. raw mills; two 16 × 245-ft. rotary kilns with four-stage twin preheaters; clinker coolers; three 13 × 45-ft. finish mills; plus blending, conveying, and dust collecting equipment.

Kuwait

Prodcn.	1980	1981	1982
	1.307	1.549	1.54

Lebanon

Prodcn.	1980	1981	1982
	2.200	2.390	2.00

Malaysia

Prodcn.	1980	1981	1982
	2.349	2.835	3.00

- Associated Pan Malaysia Cement, Kanthan: Replacing wet process kilns with four-stage preheater unit. Capacity to remain 500,000 mtpy. KHD Humboldt Wedag (France) will supply the equipment. Blue Circle Industries is technical planning consultant. Scheduled onstream in 1984.
- Associated Pan Malaysia Cement, Chemor (90 miles north of Kuala Lumpur): Modernizing by converting from wet process to dry process.
- Kedah Cement Sdn. Bhd., Pulau Langkawi, Kedah State: New coal-fired plant rated at 4,000 tpd has been ordered. IHI (Ishikawajima-Harima Heavy In-

Quantities in million metric tons, except where noted.
1 tonne = 1 metric ton = 1.10231 short tons
Prodcn. = million metric tons per year (mtpy)
Commiss.: = commissioned or to be commissioned
Princ. equip. = principal equipment
n.a. = not available at time of writing
(Note: 1982 production data is preliminary)

dustries Co., Ltd.) will undertake construction work on a turnkey basis. The IHI-NSF sintering process will be used. Scheduled onstream in 1984.

• Perak-Hanjoong Simen Snd. Bhd.: Raymond Kaiser Engineers is serving as owner's representative for a 1.2 million-mtpy plant. Turnkey contractor is Korea Heavy Industries Construction Co., Ltd. Startup scheduled for 1986. Princ. equip. (by Fuller Co.): 16 × 240-ft. rotary kiln; SF-141 preheater with flash calciner; reciprocating grate cooler; 42-in. gyratory crusher; Fuller-Loesche roller mill; Fuller-Loesche coal roller mill; two 13 × 45-ft. finish mills.

Mongolia

	1980	1981	1982
Prodcn.	0.178	0.210	0.35

Nepal

	1980	1981	1982
Prodcn.	0.031	0.031	0.03

• Indo-Nepal cement plant: Engineers India, Ltd. has prepared a report for a 3,000-tpd dry process precalcinator plant to be set up in eastern Nepal. The plant will be owned jointly by the governments of India and Nepal.

• Hetauda Cement Industries, Ltd., Hetauda (125 km south of Kathmandu): New 260,000-tpy plant equipped with a preheater kiln. Scheduled for mid-1983 operation. Contract awarded to Onoda Engineering & Construction Co. Prospective Engineering Gestion (Switzerland) is technical consulting firm, and Development Consultants is engineering contractor.

Oman, Sultanate of

• Oman Cement Co., Rusayl (near Muscat): Krupp Polysius will construct turnkey cement plant with a capacity of 2,000 mtpd. Consulting engineers are Basse Sambre-E.R.I. Startup scheduled: 1984.

• Raysut Cement Co., Salalah, Province of Dhofar: New 210,000-mtpy plant with a four-stage preheater scheduled onstream in 1983. Contract for equipment supply and plant erection was awarded to Babcock Krauss-Maffei Industrieanalagen. Holderbank Management and Consulting, Ltd. is the consulting engineer.

Pakistan

	1980	1981	1982
Prodcn.	3.336	3.538	3.81

• Mustehkam Cement Ltd.: Added a 300,000-tpy dry process, one kiln unit. KHD Humboldt-Wedag supplied the major equipment.

• Javedan Cement, Ltd. (State Cement Corp. of Pakistan), Javedan: Adding a 300,000-tpy dry process, one kiln unit. Fuller Co. supplying major equipment, including 13½ × 190-ft. rotary kiln with four-stage preheater; 12 × 26-ft. raw mill; 12 × 37-ft. finish mill; grate clinker cooler; and Plenum-Pulse dust collectors.

• Pak-Iran Cement: New 300,000-tpy plant, scheduled for 1981 operation in Darwaza (Baluchistan).

Philippines

	1980	1981	1982
Prodcn.	4.482	4.090	3.99

• Davao Union Cement Corp. Mindanao: Contract awarded to F.L. Smidth and Mutsui Co. for turnkey supply of a 1,250-mtpd cement plant. Main machinery will include an Atox mill; a CF (controlled flow) silo; a 3.75 × 53m precalciner kiln with Folax grate cooler; a coal crusher; a 4 × 28 × 3.4m Tirax raw mill; and a 3,300 kW finish mill.

• APO Cement Corp., Cebu Island: Asland has signed an agreement for expansion of existing 130,000-tpy wet process plant.

Qatar

	1980	1981	1982
Prodcn.	0.209	0.258	0.272

• Qatar National Cement Co., Doha: Belgium consultants Basse-Sambre-E.R.I. have been awarded a contract for construction of a 2,000-mtpd plant to be built at Umm Bab. This will be an extension of existing facilities.

Saudi Arabia

	1980	1981	1982
Prodcn.	3.500	4.500	6.00

• Southern Province Cement Co.: New 5,000-mtpd plant erected at plant site 35 km east of the Red Sea, 60 km southeast of the city of Gizan, and 11 km from the Yemen border. The joint venture turnkey contract was awarded to the Fuller Co. and Hyundai International Inc. (Korea). Consulting firm was Basse Sambre-E.R.I., S.A. The plant has been designed with two cement manufacturing systems side by side, each with a capacity of 2,500 mtpd. Major equipment by Fuller, incorporated in the process, includes two 42-in. gyratory crushers, two 6,000-hp, 15 × 42 ft. long ball mills, a blending and kiln feed system, two 14½ × 210 ft. long kilns, two preheaters with flash calciners, two clinker coolers, as well as two 7,000-hp, 15 × 48 ft. long finish mills. Startup: 1983.

• Yamama Saudi Cement Co., Riyadh: Extension of existing facilities by addition of a 1,500-tpd dry process Krupp Polysius kiln unit. Consulting engineers: Basse Sambre-E.R.I. Onstream in 1982.

• The Saudi-Kuwaiti Cement Manufacturing Co., Riyadh, has awarded Krupp Polysius the contract to build Saudi Arabia's largest cement facility near Khursaniyah, 100 km north of Dammam. The plant consists of two production lines with total clinker capacity of 7,000 tpd. Equipment to be supplied includes several crushing and blending units, stocking facilities, two Dopol kilns with Prepol-AS precalcining, complete electrical system, process, laboratory and dispatch automation, and water supply system with desalination plant. Assembly of the complete plant is scheduled for 1983 and commissioning for the end of 1984.

• Arabian Cement Co., Rabigh (180 km north of Jeddah on the Red Sea coast): New cement plant with four production lines rated at 4,000 tpd clinker scheduled for mid-1984 operation. KHD Humboldt Wedag will be major equipment supplier.

• Yanbu Cement Co. and Arabian Cement Co., both of Jidda, have awarded a consulting job for planning, construction, and equipment installation for two new cement plants to Naigai Consulting Co., subsidiary of Onoda Cement Co., Japan. The mills will be built near Jidda and have a production capacity of 1 million-tpy. KHD Industrieanlagen Humboldt Wedag is the major equipment supplier.

• Yanbu Cement Co., Ltd., Yanbui Extension adding 1,000 mtpd. Commiss.: 1984. Princ. equip. (by KHD Humboldt Wedag): 4.4 × 4.80 × 160m rotary kiln; grate cooler, and clinker conveyors.

Hong Kong—China Cement Co., Castle Peak, New Territories; Onstream in 1983, new 1.5 million mtpy plant burns clinker at 4,600 mtpd in an Allis-Chalmers 4.87 × 76.2 ft. rotary kiln equipped with a reinforced suspension preheater. ***(Courtesy: Raymond Kaiser Engineers)***

- Saudi White Cement Co. intends to establish a 200,000-tpy white cement plant near Riyadh. Raw material investigations and basic engineering have been carried out by Holderbank Management and Consulting Ltd.
- Qassim Cement Co.: A consulting agreement was concluded with Holderbank for the extension of the existing cement plant in Buraydah.

Singapore

	1980	1981	1982
Prodcn.	1.952	1.996	1.996

Sri Lanka

	1980	1981	1982
Prodcn.	0.571	0.642	0.65

- Sri Lanka Cement Corp., Kankesanturai cement works being modernized and expanded KHD Humboldt Wedag will furnish a single-line Humboldt preheater system for a 1,600 mtpd first extension, and Pyroclon process with secondary firing for the second 1,600 mtpd extension. Holtec Engineers of India is providing the engineering services. Scheduled onstream in 1984.

Syria (Syrian Arab Republic)

	1980	1981	1982
Prodcn.	1.995	2.230	2.25

- General Organization for Executing Industrial Projects, Government of Syria, made plans, in the '70s, for a chain of 12 dry process production lines. Seven kilns have been placed onstream. The remaining kilns are expected to go on line by mid-1983. Project consultants are The Kuljian Corp. (U.S.A.) and Development Consultants International Ltd. (Hong Kong) for engineering, design, construction supervision, and commissioning arrangements.

Taiwan

	1980	1981	1982
Prodcn.	14.063	14.343	13.43

Thailand

	1980	1981	1982
Prodcn.	5.337	6.263	6.62

- Siam City Cement Co., Ltd., Saraburi: Extension adding 0.65 million mtpy via a Krupp Polysius Dopol kiln with a Prepol-AS precalciner. Commiss.: 1983.
- An existing production line at Ta Luang is being expanded. Princ. equip. (by F.L. Smidth): 4,000-mtpd kiln with preheater/precalciner system to replace 1,500 wet process kiln; Folax cooler, 3050 kW Dundan raw mill; and homogenizing plant. Commiss.: 1983.

United Arab Emirates (Abu Dhabi, Dabai, Sharja, Ajman, Fujaira, Umm al Quaiwan, Ras al Khaima)

	1980	1981	1982
Prodcn.	1.720	2.220	2.99

- Emirate of Fujaira: New 500,000-mtpy plant commissioned in 1982. Princ. equip. (by Voest-Alpine Industrieanlagenbau): 4.6 × 69m rotary kiln; rated at 1600 mtpd; five-stage preheater; grate-type cooler. Technical consultant: Blue Circle Industries.
- Ras-al-Khaimah: Planning 500 mtpd white cement plant. Princ. equip. (by Hitachi Zosen) will include four-stage preheater. Consultants: Onoda Engineering & Consulting Co. Ltd. and Blue Circle Industries.
- Ras-al-Khaimah—Gulf Cement Co.: New 1 million-mtpy plant. Commiss.: 1982. Princ. equip. (by Ube Industries, Japan): 4.4 × 75m rotary kiln; flash calciner; two 4.1 × 16.5m raw mills; two 4.1 × 11.5m finish mills. Technical consultants: W. S. Atkins Group.
- Ummal Quaiwan—Umm al Quiwan Cement Industries Co.: Planning 1 million-mtpy plant. Consultants: W. S. Atkins Group.

Vietnam

	1980	1981	1982
Prodcn.	0.640	0.653	0.80

- Technoimport has contracted with F.L. Smidth to supply equipment for a new 3,100-tpd plant at Hoang Thach near Dong Trieu. Equipment includes a 775-tpd crusher, blending and storage equipment for 43,000 tons of raw materials, an 18½ × 23-ft., 3,900 kW finish mill, an 18 × 293-ft. kiln with four-stage twin preheaters and planetary cooler; a 6,500 kW finish mill, 17 × 46-ft.; and equipment for dispatch of cement in bulk and sacks. The system further includes equipment for advanced computerized control systems.

Yemen (Yemen Arab Republic)

	1980	1981	1982
Prodcn.	0.081	0.081	0.85

- New 500,000-mtpy plant at Maran. Commiss.: 1982. Princ. equipment and engineering (by IHI, Japan). Similar capacity plant scheduled for construction at Mafraq.

OCEANIA

Australia

	1980	1981	1982
Prodcn.	5.497	5.288	5.26

Fiji Islands

	1980	1981	1982
Prodcn.	0.084	0.091	0.09

New Caledonia

	1980	1981	1982
Prodcn.	0.056	0.050	0.06

New Zealand

	1980	1981	1982
Prodcn.	0.750	0.755	0.78

• Wilsons (NZ) Portland Cement Ltd., Auckland: Completed conversion of one kiln at its Portland works from wet to dry process. The existing kiln was shortened and a four-stage preheater added. A Loesche raw mill was also installed. Fuller Co. was main contractor and Blue Circle Industries acted as technical consultants.

EUROPE

Albania

	1980	1981	1982
Prodcn.	1.000	1.089	1.09

Austria

	1980	1981	1982
Prodcn.	5.455	5.288	5.26

Belgium

	1980	1981	1982
Prodcn.	7.482	7.500	7.44

• New 750,000-mtpy dry process plant to be built at Antoing. Commiss.: 1986.

• Compagnie des Ciments Belges, Gaurain-Ramecroix: Modification of 3,580-mtpd Polysius Dopol kiln to 4,300-mtpd Polysius Prepol-AT precalcining kiln, including additional Polysius grate cooler.

England—Rugby Portland Cement Co. PLC, Rochester: Photo shows cyclone tower with crusher-dryer after conversion of wet process kiln to semi-dry system. *(Courtesy: F.L. Smidth & Co., Inc.)*

Bulgaria

	1980	1981	1982
Prodcn.	5.359	5.433	5.63

Cyprus

	1980	1981	1982
Prodcn.	1.233	1.035	1.00

Czechoslovakia

	1980	1981	1982
Prodcn.	10.546	10.646	10.34

Denmark

	1980	1981	1982
Prodcn.	1.917	1.602	1.60

Finland

	1980	1981	1982
Prodcn.	1.793	1.787	1.81

France

	1980	1981	1982
Prodcn.	29.104	28.229	26.13

Germany, East (German Democratic Republic)

	1980	1981	1982
Prodcn.	12.444	12.500	12.50

Germany, West (Federal Republic of Germany)

	1980	1981	1982
Prodcn.	35.547	33.029	32.02

• Dyckerhoff Werk, Bechnum: Conversion of existing F.L. Smidth Unax kiln to increase production from 3,000 to 3,600 mtpd.

Greece

	1980	1981	1982
Prodcn.	13.150	13.500	13.50

• Heracles General Cement Co. S.A., Euboea: New 1.5 million-mtpy cement plant. Princ. equip. (by F.L. Smidth): 4.75 × 75m, 4,000-mtpd, precalciner kiln with Folax grate cooler; MPS 4850/3150 raw mill; 3.2 × 6 × 2.4m Tirax coal mill; and two 5 × 14m finish mills with Symetro gear units. Commiss.: 1983.

• Applications have been made to the Greek government for setting up the following cement plants: Kalydon S.A., Kalamaki Bay in Aetolo-Acarnania, 1 million mtpy; Cretan Cement Industry S.A., Lassithi province, Crete; 1 million mtpy; Samos Cement S.A., Plaka on the island of Samos, 1.5 million mtpy; Archirodon S.A., North Western tip of Crete; Cement and Harbour Works S.A., Island of Telos in the Dodecanese, 3 million mtpy; Hellenic Cement S.A., Kryoneri in Aetolo-Acarnania, or at Perdika in Thesprotia province, 1.5 million mtpy; Thracian Cement S.A., Thrace, 4.6 million mtpy.

Hungary

	1980	1981	1982
Prodcn.	4.660	4.635	4.37

Iceland

	1980	1981	1982
Prodcn.	0.122	0.122	.12

Ireland

	1980	1981	1982
Prodcn.	1.868	1.938	1.91

• Irish Cement Ltd., Limerick: Expansion via addition of dry process coal-fired line added 650,000 mtpy capacity. Commiss.: 1983. Princ. equip.: F.L. Smidth 4.75 × 75m long rotary kiln rated at 2,100 mtpd, with planetary coolers and single-string four-stage preheater; FLS 195-tph raw mill; two 75-tph FLS cement mills;

Hazemag 1,200-tph limestone crusher; Koch blending and reclaim system; Beumer elevators; Aumund clinker conveyor; and Siemens S-5 process controllers with an R-30 computer.

Italy

Prodcn.	1980	1981	1982
	41.772	41.553	42.00

- Cementerie Aldo Barbetti, Gubbio: Adding 1,500-mtpd F.L. Smidth line incorporating a 4.55 × 68m cyclone preheater kiln with a Folax cooler.
- Cementi Piave, Pederobba: Converting kiln to Polysius Prepol precalciner kiln, rated at 2,640 mtpd.
- Cementizillo S.P.A., Fanna: One kiln conversion to Polysius Dopol preheater kiln rated at 2,200 mtpd.
- Unicem S.P.A., Arcangelo: Adding 600-mtpd Polysius Lepol kiln with preheater grate and Recupol cooler.
- Ital. Leganti Gubio: Adding 2,500-mtpd kiln line, including Polysius Dopol/Prepol-AT precalcining kiln and grate cooler.

Luxembourg

Prodcn.	1980	1981	1982
	0.325	0.300	0.30

- ARBED Luxembourg steel group planning new cement plant in Rumelange in joint venture with Ciments de France. Commiss.: 1983.

Netherlands

Prodcn.	1980	1981	1982
	3.745	3.500	3.63

- Eerste Neder Landse Cement Industrie N.V., Maastricht: Adding cyclones and a satellite cooler replacement to a kiln to increase capacity from 600,000 mtpy to 850,000 mtpy.

Norway

Prodcn.	1980	1981	1982
	2.092	1.782	1.71

Poland

Prodcn.	1980	1981	1982
	18.444	14.225	16.04

Portugal

Prodcn.	1980	1981	1982
	5.748	5.697	5.81

- Secil Companhia General de Cale Cimento, Setubal: Expansion via new 3,500-mtpd production line. Princ. equip.: F.L. Smidth four-stage 5.25 × 83m kiln with Unax cooler and riser duct calciner. Commiss.: 1983.

England—Blue Circle Industries PLC, Northfleet Works, Kent: Two wet process kilns were converted to semi-dry process via filter presses at the Northfleet works. *(Courtesy: Blue Circle Industries PLC)*

- Souselas Cement: Adding 3,500-mtpd Polysius production line.

Romania

Prodcn.	1980	1981	1982
	15.611	14.751	14.97

Spain (includes Canary Islands)

Prodcn.	1980	1981	1982
	28.009	28.752	29.03

- Cementos Portland Morata de Jalon S.A., Zaragoza conversion of 300-mtpd wet process existing kiln to 500-mtpd dry process system. Princ. equip. (by Fuller): SP-120 preheater and new clinker cooler.
- Cementos Alfa S.A.: To refurbish one of its cement plants. Princ. equip. (by GATX-Fuller S.A.): SP-126 preheater with riser duct burning; grate cooler with baghouses; and instrumentation and motor controls. Capacity: 850 mtpd. Commiss.: 1983.
- Cementos Alba S.A., Werk Jerez: Conversion of existing plant by Polysius equipment to 2,000 mtpd.

Sweden

Prodcn.	1980	1981	1982
	2.520	2.320	2.30

Switzerland

Prodcn.	1980	1981	1982
	4.252	4.355	4.17

- Jura Cement: Expansion program. Princ. equip. (by Polysius): Dopol/Prepol-AT precalcining kiln; 2,000-mtph roller mill; and a 13.1-mtph coal mill.

Turkey

Prodcn.	1980	1981	1982
	12.875	15.043	15.06

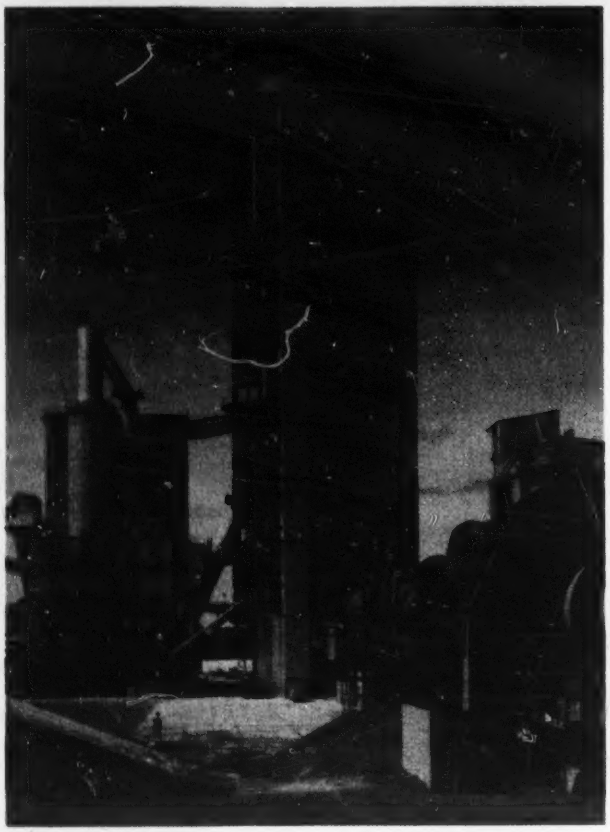
- Turkiye Cimento Sanagii T.A.S.: Constructing seven dry process plants with a capacity of 1,750 mtpd each in various parts of the country. Plant locations are: Edirne, European part of Turkey; Denizli, southwestern part; Ladik, north central part; Ergani, Adiyaman, Urfa, Siirt, all in southeastern part. Adiyaman plant commiss.: in 1983. Princ. equip. supplier: KHD Humboldt-Wedag. Engineering Consultants: Dyckerhoff Engineering GmbH.

United Kingdom

Prodcn.	1980	1981	1982
	14.808	12.828	12.97

- Blue Circle Industries, PLC: At Shipton-on-Cherwell (near Oxford). Planning new 750,000-mtpy

Quantities in million metric tons, except where noted.
1 tonne = 1 metric ton = 1.10231 short tons
Prodcn. = million metric tons per year (mtpy)
Commiss.: = commissioned or to be commissioned
Princ. equip. = principal equipment
n.a. = not available at time of writing
(Note: 1982 production data is preliminary)



Ireland—Irish Cement Ltd., Limerick: .Expansion in 1983 via 2,100 mtpd F.L. Smidth kiln system using four-stage preheater and planetary coolers adds 650,000 mtpy capacity. *(Courtesy: F.L. Smidth & Co., Inc.)*

dry process works to replace older plant at Cauldon works, Staffordshire. Conversion from three-kiln Lepol semi-dry process to single kiln dru process incorporating pre-calcining preheater. Capacity rating: 750,000 mtpy.

- At North Fleet Works, Kent. Two wet process kilns converted to semi-dry process via filter presses. Commiss.: 1982.
- At Shoreham Works, Sussex. Two-kiln wet process plant converted to semi-dry process via filter presses. Commiss.: 1982.
- Rugby Portland Cement Co. PLC, Southam, Warwickshire. Converted a second wet process kiln to semi-wet system.
- Ribblesdale Cement Co., Ltd., Lancashire, England: Plant extension. F.L. Smidth supplied main equipment, including circular raw material storage; raw mill; 2,300-tpd single-string suspended preheater with precalciner; 4.15 × 58m kiln with bypass; Folax grate cooler; two conditioning towers; and three electrostatic precipitators. Onstream: 1982.

U.S.S.R.

	1980	1981	1982
Prodcn.	125.051	127.171	124.00

Yugoslavia

	1980	1981	1982
Prodcn.	9.315	9.779	9.71

- INUG Business Association, Zagreb (a consortium of Croatian firms) planning a 900,000-mtpy plant at Podruta, in the Varazdin district of central Croatia.
- Pragoinvest (Czechoslovakia) has a contract for a 2,200-mtpd cement plant to be located at Bela Palanka. Equipment to include a 4.8 × 72m kiln with semicalcination system and planetary coolers, a 4.8 × 13m raw mill, and two 4.2 × 13m finish mills.
- Fabrika Cementa Nov Popovac: Expanding Popovac plant with a 2,000 mtpd addition. Major equipment, being supplied by F.L. Smidth and Pragoinvest, includes 16½ × 263-ft. precalciner rotary kiln equipped with four-stage cyclone preheater and Unax planetary cooler; 16 × 27-ft., 2,800 kW raw mill; and a 16 × 46-ft., 5,160 kW finish mill. Onstream in 1982.
- Extension of Kosjeric plant situated about 150 km southwest of Belgrade. In cooperation with the Czechoslovakian firm, Pragoinvest, F.L. Smidth is supplying the following major equipment: 825-tpd crusher; circular prehomogenizing storage for limestone; 1,600 kW raw mill; 4.15 × 58m precalciner kiln with four-stage preheater and Folax cooler; two 4.4 × 12m Combidan cement mills; 4 × 5m Tirax coal mill; portal scraper storage; and automatic control equipment. The new production line will add 2,200 tpd capacity.

NORTH AMERICA

Canada

	1980	1981	1982
Prodcn.	10.497	10.368	n.a.

- Ciment Quebec, Inc., St. Basile de Portneuf, Quebec: Expansion via dry process system rated at 2,000 mtpd replaced 1,100 mtpd wet process plant. Commiss.: 1982. Princ. equip. (by Fuller Co.): Four-stage preheater/flash calciner/rotary kiln installation; Fuller-Loesche airswept roller mill; Fuller-Kinyon pumps; Airslide conveying equipment; and dust collectors.

United States of America

	1980	1981	1982
Prodcn.	66.4	62.6	57.5

- United States data are covered in this issue in the report, "Portland cement in the United States: Production and project survey."

CENTRAL AMERICA

Bahamas

	1980	1981	1982
Prodcn.	0.472	0.029	0.05

Barbados

	1980	1981	1982
Prodcn.	—	—	—

- Arawak Cement Co., created as joint venture between the Barbados government and the Trinidad and Tobago governments, has started construction of a 1,000-mtpd cement plant on the west coast of Barbados. Scheduled for mid-1984 startup, the project is on a turnkey basis from Voest-Alpine of Austria. Holderbank Consulting Ltd. is responsible for the project supervision on behalf of the Barbados government.

Costa Rica

	1980	1981	1982
Prodcn.	0.553	0.694	0.75

Cuba

	1980	1981	1982
Prodcn.	2.831	3.292	3.16

Dominican Republic

	1980	1981	1982
Prodcn.	1.015	0.951	0.91

El Salvador

	1980	1981	1982
Prodcn.	0.520	0.500	0.50

Guatemala

	1980	1981	1982
Prodcn.	0.569	0.568	0.54

Haiti

	1980	1981	1982
Prodcn.	0.243	0.229	0.23

Honduras

	1980	1981	1982
Prodcn.	0.445	0.225	0.25

Jamaica

	1980	1981	1982
Prodcn.	0.144	0.163	0.16

- Caribbean Cement Co. Ltd. Expanding its Kingston plant with a 1,300-mtpd installation. Major equipment, supplied by Allis-Chalmers, includes a 14×197-ft. rotary kiln with a suspension preheater; a cooler with an 8×22-ft. inclined section and a 10×42-ft. horizontal section; and a roller mill. Commiss.: 1982.

Martinique

	1980	1981	1982
Prodcn.	0.160	0.200	n.a.

Mexico

	1980	1981	1982
Prodcn.	16.260	18.066	18.00

- Cemento Portland Nacional S.A. Hermosillo, (Sonora) (plant is about 25 km from Hermosillo): New 1 million-tpy plant went onstream in 1982. F.L. Smidth supplied major equipment and erected and commissioned the plant. Engineering was done by Blue Circle Industries which has a 49% share in the company. The main FLS equipment consists of a 4.35×66m kiln with single string, four-stage preheater and precalciner; Folax grate cooler; two 4.8×8.57m long raw mills with 1800 B Symetro gears—all are arranged for closed-circuit grinding, crushing, and homogenizing. Smidth also supplied dedusting equipment and all auxiliary and electrical equipment, including instrumentation and control.
- Cementos Tabasco, Macuspana (Tabasco:) New 750,000-tpy dry process (precalciner kiln) plant, onstream in 1982. Consulting engineering and design by Holderbank Consulting Ltd. (Canada). Main equipment, supplied by F.L. Smidth, includes 2,200-mtpd kiln with a precalciner; 185-mtph airswept ball mill; 124-mtph cement mill.
- Cimentos de Chihuahua, S.A., Chihuahua (Chih.) Expanding plant by a 1,700-mtpd clinker line. Scheduled onstream in 1982. Main machinery being supplied by F.L. Smidth, includes 4.8×9m Duodan mill with central Symetro drive; homogenizing system; four-stage preheater; 4.55×68m kiln equipped with Unax planetary cooler. Sereland (Spain) is in charge of design, equipment procurement, and supervision of the expansion.
- Cementos Mexicanos S.A., Monterrey, Est. Nuevo Leon: At the beginning of 1979, Cementos Mexicanos S.A. followed up their Valles expansion project with a similar extension of their Monterrey plant. The new kiln and associated raw mill and cement mill are identical to the F.L. Smidth Valles equipment. Holderbank Consulting Ltd., Ontario, carried out basic conceptual work, equipment procurement, drawings, and process control engineering. On line in 1982.
- Cementos Mexicanos S.A., Torreon, Ets. Coahuila: Expanding plant with new 2,200-mtpd production line to be furnished by F.L. Smidth.
- Cementos Mexicanos S.A., Guadalajara plant: F.L. Smidth furnishing equipment for a new 2,200-mtpd production line expansion.
- Cementos Mexicanos S.A., Huichapan (130 km north of Mexico City): F.L. Smidth supplying major equipment for new 3,200-mtpd plant. Main machinery includes 5×11.75m plus 3.2m Tirax raw mill; CF homogenizing silo; 3,200-mtpd, 4.55×68m precalciner kiln with Folax cooler; two 4.6×14m Combidan finish mills; and a packing plant.
- Cementos Maya (Cementos Mexicanos group), Guadalajara: New plant expansion of 2,200 mtpd is expected to be started up by first quarter of 1983. F.L. Smidth is supplying kiln and mills. Engineering is being done by C. Maya with the assistance of Holderbank Consulting Ltd. for the electrical and process control engineering.
- Cementos Vera Cruz S.A. (Empresas Tolteca de Mexico, S.A. group), Orizaba, Vera Cruz: Expansion was slated for mid-1981 operation. Installing one Polysius Prepo preheater with precalciner/kiln, rated at 2,400 tpd. Holderbank Consulting Ltd., Ontario, carried out engineering design studies, and equipment procurement.
- Cementos Tolteca S.A., Zapotiltic: Expansion of 2,500 mtpd. Main equipment by F.L. Smidth, includes two Tirax-Unidan 5.6×8.25m raw mills, 4,500 kW each; silo blending system; four-stage preheater with firing in riser pipe; 4.75×75m rotary

kiln with Unax planetary cooler. This is a Blue Circle project. Scheduled onstream in 1983.

- Cementos Guadalajara is expanding its plant by 2,200 tpd. F.L. Smidth is supplying the main equipment. Holderbank Consulting is performing the instrumentation and control engineering. Scheduled onstream in 1983.

Nicaragua

	1980	1981	1982
Prodcn.	0.154	0.100	0.10

Panama

	1980	1981	1982
Prodcn.	0.565	0.520	0.53

Trinidad and Tobago

	1980	1981	1982
Prodcn.	0.183	0.137	0.24

(See also: Barbados)

- Trinidad Cement Ltd., Claxton Bay, Trinidad: New 1,000-tpd wet plant scheduled for commissioning in 1982. Equipment provided by Voest-Alpine, Austria.

SOUTH AMERICA

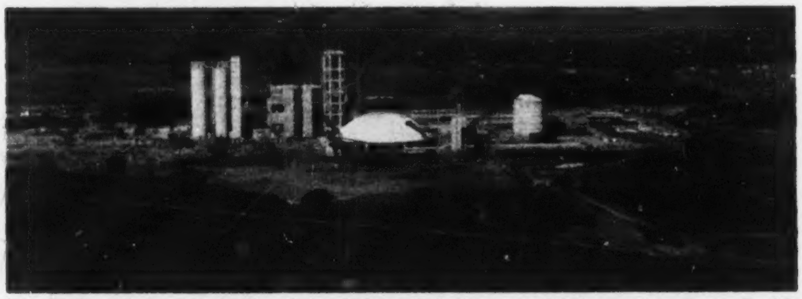
Argentina

	1980	1981	1982
Prodcn.	7.133	6.648	5.59

- Juan Minetti S.A., Puesta Viejo (Jujuy Province): New 720,000-mtpy plant. Commiss.: 1982. Princ. equip. (by Centunion, Spain and KHD Humboldt-Wedag): 4.4 × 6.4m preheater kiln. Technical assistance: Asland S.A.
- Juan Minetti S.A., Malagueno (Cordoba): New 540,000-mtpy plant. Commiss.: 1982. Princ. equip. (by Centunion, Spain and KHD Humboldt-Wedag): 4.4 × 6.4m rotary kiln; 4 × 13m, 100-tph clinker kiln mill. Technical assistance: Asland S.A.
- Calera Avellaneda, Olavaria: Adding precalcining unit for conversion of preheater kiln line to increase clinker production 300 mtpd. Princ. equip. (by Centunion, Spain and KHD Humboldt-Wedag).
- Corp. Cementera Argentina S.A., Capdeville: Expansion incorporating F.L. Smidth 2,000-tpd kiln with four-stage cyclone preheater and a Folax grate cooler: Commiss.: 1982.
- Cementera Santa, Pico Truncado (Santa Cruz province): New 636,000-mtpy plant, to be built by Ateinsa, Spain. Commiss.: 1983.
- Cementos Noa, Juramento (Salta province): Expansion commiss.: 1984. Princ. equip. (by Buhler Miag and Ateinsa): 4.6 × 70m kiln with four-stage preheater; 3,800 kW raw mill; 3,800 kW cement mill; and a bagging plant.

Bolivia

	1980	1981	1982
Prodcn.	0.296	0.369	0.299



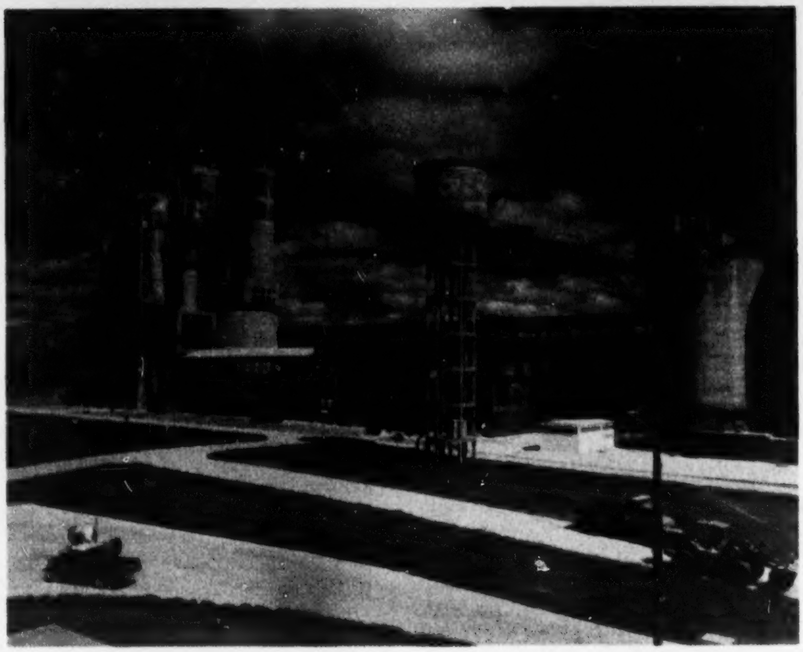
Venezuela—Cementos Andino S.A., Valera: Polysius precalcining system is used with 1,800 mtpd kiln. ***(Courtesy: Polysius Corp.)***

- Corporacion Regional de Desarrolo, Yacuces (Chiquitos province, dept. of Santa Cruz): New 335,000-mtpy cement plant with cyclone preheater. Consulting engineering contract: Lafarge Consulting e Estudios. Commiss.: 1983.
- Corporacion Regional de Desarrolo, Sevaruyo: New 150,000-mtpy plant. Contract including design, civil engineering, equipment specifications to Lafarge Consultants Ltd., Canada, with Bolivian firm C.B.P.I.

Brazil

	1980	1981	1982
Prodcn.	27.193	28.500	25.40

- Cimento Portland Mato Grasso S.A., Nobres (States of Mato Grasso). New 600,000-mtpy cement plant is planned. Financial plans being developed.
- Cimento Tocantins S.A.: Extension via F.L. Smidth 1,000-mtpd dry process kiln. Commiss.: 1984.
- Cia Cimento Portland Itau, Itau de Minas (Minais Gerais): Plant extension. Princ. equip. (by F.L. Smidth): 4.55 × 68m Unax kiln; 4 × 7m raw mill; two 4.4 × 13m cement mills. Commiss.: 1983.
- Cia de Cimento Portland Rio Branco, Curitiba (Parana): Extension with two new production lines, each rated at 2200 mtpd. Princ. equip. (by F.L. Smidth): 5 × 80m Unax kiln; 5 × 8.5m raw mill; two 4 × 12m cement mills. Commiss.: 1982.
- S.A. Industrias Votorantim, Salto de Pirapora (Sao Paulo): New 2,500-mtpd plant. Commiss.: 1982. Princ. equip. (by F.L. Smidth): 5 × 80m Unax kiln; 5 × 10.75m raw mill; two 4.2 × 13m cement mills.
- Ciminas-Cimento Nacional de Minas, Pedro Leopoldo (Minas Gerais): Expansion with new 1 million-tpy project. Princ. equip. (by F.L. Smidth): 5.25 × 83m, 2,900-mtpd kiln with calciner and Unax cooler; 5.6 × 7.25m Tirax raw mill; two 4.2 × 13m Unidan finish mills. Commiss.: 1984.
- Cimento Maua S.A., Cantagalo (Rio de Janeiro): New 7,000-mtpy plant. Commiss.: 1982. Princ. equip. (by F.L. Smidth and Christiani-Nielsen): 3.95 × 56m precalciner kiln with Folax grate cooler; 5.2 × 9.75m raw mill, 3.8 × 12m cement mill. Consulting engineers: Lafarge Consultoria e Estudio and C.N.C.P.
- Cimento Tupi S.A., Pedro do Sino: Expansion increased clinker production from 1,800 mtpd to 2,550 mtpd via Humboldt-Wedag Pyroclon process. Princ. equip. (by Consortium of Zanini Equipamentoes Pesados S.A. and KHD Humboldt-Wedag). Consulting engineers: Cementia Engineering & Consulting Ltd., Switzerland. Commiss.: 1982.



Brazil—This 700 mtpd plant in Itapicuru was built by Pragoinvest. *(Courtesy: Pragoinvest)*

- Cimento Santa Rita, Itapevi cement works: Increasing capacity of No. 4 kiln line from present 800 mtpd to 1,350 mtpd by addition of KHD Humboldt-Wedag Pyroclon system for precalcination of raw meal. Equipment installation (by a consortium of KHD Humboldt-Wedag and Zanini of Brazil). Commiss.: 1982.
- Pragoinvest (Czechoslovakia) has received contracts for three, 1,000-mtpd cement plants. The plants are to be located at Itapissuma, Itaguarana, and Itaguassu. At each plant, equipment will comprise a 4.4×12m raw mill, 4.2×13m cement mill, and 72m long kiln with preheater. Scheduled onstream gradually in 1983-84.
- Pragoinvest plant rated at 1,400 mtpd, Manaus. Commiss.: 1982.
- Pragoinvest plant, Prainha, rated at 1,400 mtpd, Commiss.: 1983.

Chile

	1980	1981	1982
Prodcn.	1.567	1.847	1.09

- Fabrica de Cemento El Melon S.A., La Calera: Expansion increased capacity by 250,000 mtpy. Princ. equip. (by F.L. Smidth): four-stage preheater, precalciner, and alkali bypass. Technical consultant: Blue Circle Industries. Commiss.: 1982.
- Cemento Cerro Blanco de Polpaico, Polpaico: Expansion added 500,000 mtpy. Princ. equip. (by Polysius, S.A., Spain): 1,500-mtpd rotary kiln system with Dopol preheater; flotation enrichment process for limestone; filter press system; two wet process grinding mills; and a finish mill. Project management and design: Holderbank Consulting Ltd., Canada. Commiss.: 1983.

Colombia

	1980	1981	1982
Prodcn.	4.351	5.198	5.03

- Cementos Rioclaro S.A., Antioquia: New 550,000-tpy cement plant scheduled for construction. Princ. equip. supplier: F.L. Smidth.
- Cementos Boyaca, S.A., Nobsa: Planning 1,000-tpd kiln to replace obsolete equipment. Commiss.: 1986. Consultant: Holderbank Consulting Ltd.
- Cementos Rio Clara: New 1,500-mtpd plant to be located on new main road between Medellin and Bogota. Commiss.: 1985. Technical consultants: Holderbank.
- Fabrica de Cemento Samper S.A., La Calera: Expansion via additional 1,500-mtpd production line. Princ. equip. (by F.L. Smidth): 5×165-ft. rotary kiln with two-stage cyclone preheater and Unax planetary cooler. Commiss.: 1982.
- Cementos Diamante S.A., Cucuta: Expansion from 75,000 mtpy to 150,000 mtpy. Princ. equip.: Suspension preheater kiln. Consulting eng.: Prospective Engineering Gestion.

Ecuador

	1980	1981	1982
Prodcn.	1.389	1.452	1.36

Paraguay

	1980	1981	1982
Prodcn.	0.177	1.161	0.15

- Industria Nacional del Cemento, Vallemi: Conversion of two wet kiln lines with total capacity of 200,000 mtpy to dry process with planned capacity of 450,000 mtpd. Princ. equip.: (by GATX-Fuller S.A., Spain). Commiss.: 1983. New production line, scheduled for 1985, to incorporate F.L. Smidth equipment. Technical consultant: Asland.
- Industria Nacional del Cemento, Itapucumi: New 600,000-mtpy dry process plant scheduled onstream in 1983. Technical consultant: Asland.

Peru

	1980	1981	1982
Prodcn.	2.169	3.080	2.59

Surinam

	1980	1981	1982
Prodcn.	0.070	.070	.07

Uruguay

	1980	1981	1982
Prodcn.	0.685	0.670	0.65

Venezuela

	1980	1981	1982
Prodcn.	4.843	4.900	5.59

- Consolidada de Cementos C.A., San Sebastian: Expansion via one 2,400 mtpd. Allis-Chalmers dry process kiln. Commiss.: 1982.

Quantities in million metric tons, except where noted.
1 tonne = 1 metric ton = 1.10231 short tons
Prodcn. = million metric tons per year (mtpy)
Commiss.: = commissioned or to be commissioned
Princ. equip. = principal equipment
n.a. = not available at time of writing
(Note: 1982 production data is preliminary)

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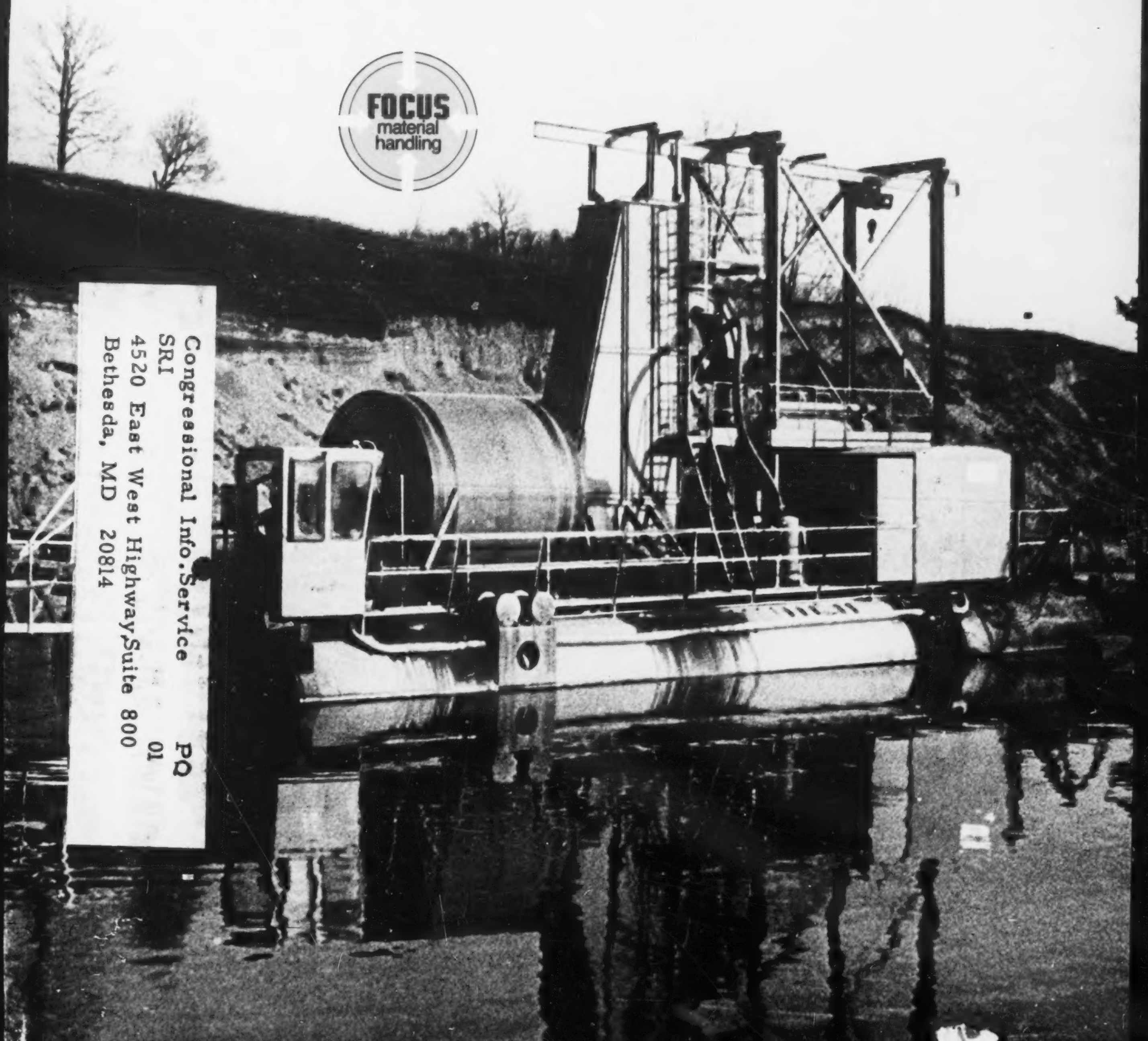

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ON THIS MONTH'S COVER

The first airlift dredge of its type in North America, built by Pressair of West Germany and operated by Morgan Sand & Gravel, Brighton, Mich. Story on page 28.

industry news

Reidel Int'l completes s&g purchase from Lone Star

Riedel International and Lone Star Industries, Inc., have completed a transaction in which Riedel purchased two ready-mix concrete plants near Seattle, Wash., for more than $15 million cash. Earlier the two companies had reached an agreement in principle that involved more than $19 million, but Riedel exercised its option not to purchase certain property.

Riedel intends to rename the facilities Pioneer Construction Materials Co., a reference to the early 1900s, when the operations were family-owned for more than 60 years under the name Pioneer Sand and Gravel. Vern Scott, president of Riedel Construction Materials Co., will have overall responsibility of the operations; James A. Repman will manage the facilities.

Lone Star to sell two cement plants

Lone Star Industries, Inc., has agreed in principle to sell two of its cement plants. St. Lawrence Cement, Inc., Mount Royal, Quebec, will purchase the Catskill, N.Y., plant for more than $30 million cash. The Canadian firm is a producer of cement and related products with a U.S. subsidiary, Independent Cement Corp., Albany, N.Y.

In the second transaction, Lone Star has agreed in principle to sell its Seattle, Wash., cement plant to Ash Grove Cement Co. That purchase is subject to execution of a definitive agreement, receipt of regulatory approvals, and other usual conditions. No purchase price was announced. Ash Grove's wholly owned subsidiary, Oregon Portland Cement Co., will operate the facility.

Lone Star previously had announced that the Seattle plant would be purchased by a partnership led by Australian producer Adelaide Brighton Cement Holdings, Ltd.

Moore McCormack completes cement plant purchase

Moore McCormack Cement has completed the purchase of a Knoxville, Tenn., cement plant and related terminals from Ideal Basic Industries, Inc., for $50 million in cash plus the value of inventory. The plant has a design capacity of 550,000 tpy and its dry process precalciner kiln system is coal-fired. Included in the purchase are cement terminals located in Castle Hayne and Statesville, N.C., Gray Station, Tenn., and a cement bulk transfer facility in Wilmington, N.C.

Marietta's Industrial Sand Division moves offices

Martin Marietta's Industrial Sand Division has relocated its headquarters from surburban Chicago to Wedron, Ill., in LaSalle County. The new offices are located at the division's 1,050-acre silica sand facility, a hydraulic mining operation recently modernized and expanded. The division has reserves equivalent to 125 years at current capacity and produces 17 grades of foundry, glass, ceramic, hydraulic fracturing, and specialty sands.

Unimin expanding its North Carolina sand operation

Unimin Corporation has announced the expansion of its silica sand operation in Marston, N.C. The firm will invest $6 million in a new silica flour facility that will include the latest technology available for the grinding of silica sand. The plant, planned to be on stream in 12-15 months, will provide multiple grades of silica flour for the chemical and fiberglass markets. The plant's design includes storage capacities combined with a separate rail siding and load-out for trucks.

Third quarter housing shows modest gain— F. W. Dodge

Construction of new housing units in the third quarter of 1983 showed a modest gain over the year's second quarter and a large margin over the depressed volume of 1982 building when mortgage rates still were close to their peak, according to F. W. Dodge Division of McGraw-Hill Information Systems Co.

Third quarter housing starts, totaling 495,386 units, were 67% stronger than in the same period of 1982. After adjustment for seasonality, however, the latest 3 months showed only a modest 6% advance over 1983's second quarter

Comparison of 1983/1982 Construction Contract Values*

	11 Mos. 1983 (000,000)	11 Mos. 1982 (000,000)	Cumulative Percent Change
Nonresidential building	$ 57,214.1	$ 55,662.2	+ 3
Residential building	86,811.0	53,804.5	+61
Nonbuilding construction	34,517.9	32,659.3	+ 6
Total construction	$178,543.0	$142,126.0	+26

Dodge Index
(1977 = 100, Seasonally Adjusted)
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**Based on statistics compiled by F. W. Dodge Div., McGraw-Hill Information Systems*

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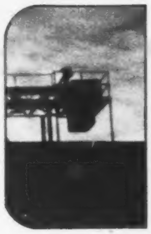

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A review of blasting trends will be highlighted along with Con/Agg show exhibit and convention reports

ON THIS MONTH'S COVER

President Ronald Reagan addresses an audience of 4,000 Con/Agg producers and exhibitors at Chicago's Arie Crown Theater. Photo by Sandy Herod.

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to Pioneer Concrete of Texas, Inc., in separate transactions completed in 1983 and subject to regulatory requirements. Also, Lone Star has an agreement to sell its north Texas aggregates operations to Pioneer. Combined, the transactions involve cash and notes totaling more than $40 million.

Also at Lone Star, Robert T. Campion, chairman and president of Lear Siegler, Inc., has been elected to the board of directors. Campion has been chairman of Lear Siegler, a firm with interests in aerospace, material handling, and other industries, since 1974, and president since 1971.

Obituary

Eugenia J. Vail

Eugenia J. Vail, a long-time member of the staff of Pit & Quarry Publications, Inc., died January 17 after suffering a massive stroke. Responsible for a variety of functions during her career with this publication, she served most recently as book department manager.

A native Chicagoan, Mrs. Vail first joined the staff in 1945. She left several years later to raise her family and then returned in 1969 to continue a career that contributed in many ways to the smooth functioning of *Pit & Quarry* and *Concrete* magazines.

Mrs. Vail is survived by her husband, John, and by two sons, John Paul and Richard.

Crushed stone managers to meet in Nashville

There still may be an opportunity for crushed stone industry managers to attend a retreat, sponsored by the National Crushed Stone Association, and scheduled for April 1-4 at the Opryland Hotel, Nashville, Tenn. Only 30 managers can attend the session. A previous retreat, held last October, received high marks from attendees who complimented the program's instructors, all veterans of NCSA's Supervisory Training Program. Contact NCSA today if interested.

National Gypsum names new president

James R. Voisinet has been elected president and chief operat-

Comparison of 1983/1982 Construction Contract Values*

	12 Mos. 1983 (000,000)	12 Mos. 1982 (000,000)	Cumulative Percent Change
Nonresidential building	$ 61,904.7	$ 59,584.0	+ 4
Residential building	93,200.9	59,209.8	+57
Nonbuilding construction	37,645.2	37,436.0	+ 1
Total construction	$192,750.8	$156,239.8	+23

Dodge Index
(1977 = 100, Seasonally Adjusted)

October 1983 .... 139 November 1983 ...... 145 December 1983 134

**Based on statistics compiled by F. W. Dodge Div., McGraw-Hill Information Systems*

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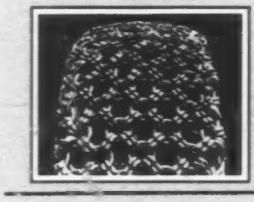

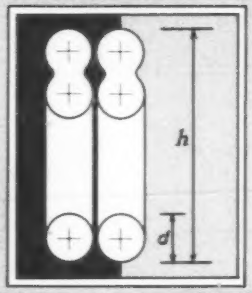

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MAY 1984

Lime

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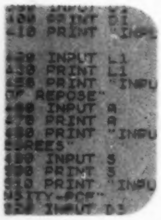

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ON THIS MONTH'S COVER

United States Gypsum Co.'s New Braunfels, Tex. lime plant illuminates the night. Photo courtesy of U.S. Gypsum.

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for the aggregate producers. Attendance was nearly 290, making it one of the largest gatherings in the associations' histories. Speaker topics and roundtable discussions centered on promotion and marketing, safety, and other industry problems.

New officers of KRMCA elected were: President—Dean Salisbury, Haven Redi-Mix; first vice president—Jim Powell, Allied, Inc.; second vice president—Richard Allen, Builders Concrete & Supply; and secretary/treasurer—M. H. Ohlemeier, Wakeeney Redi-Mix. Newly elected to the board of directors are: Bruce Collins, Concrete Construction Service, Inc.; and A. J. Holmquist, A.J.'s Quality Concrete, Inc.

KAPA officers for 1984 are: President—Steven Hatfield, Ritchie Sand Co.; vice president—John Neuner, Kansas Sand & Concrete, Inc.; and secretary/treasurer—Dennis Clovis, Salina Sand Co. The new director elected was Harold Morgison, Dodge City Sand Co.

OSHA chief Auchter resigns

Thorne G. Auchter resigned as head of the Occupational Safety and Health Administration March 30. At press time, no successor had been named, although acting chief Patrick R. Tyson, former deputy assistant secretary, is reportedly on top of the government's list.

Auchter advocated "friendly persuasion" with regulated businesses rather than the stern policing practices once employed. As a result, consumer groups and organized labor criticized him throughout his 3-year tenure. However, the 39-year-old Auchter has said his resigning had nothing to do with criticism of his performance.

Auchter, who handled President Reagan's 1980 campaign effort in the state of Florida, is now president of a Kansas construction company.

Pitcock named AGC president

Houston general contractor Doug Pitcock is the new president of the 32,500 member firm Associated General Contractors of America. He is the fifth open shop president of the association during the

Comparison of 1984/1983 Construction Contract Values*

	2 Mos. 1984 (000,000)	2 Mos. 1983 (000,000)	Cumulative Percent Change
Nonresidential building	$ 9,565.5	$ 8,490.5	+13
Residential building	13,418.4	10,022.6	+34
Nonbuilding construction	4,995.0	4,198.3	+19
Total construction	$27,978.9	$22,711.4	+23

Dodge Index
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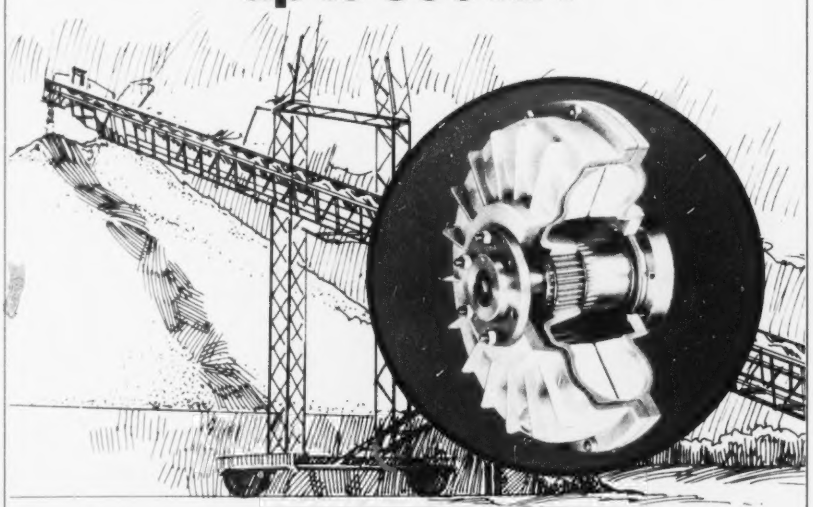

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Conservation tillage: a growing market for aglime

By Bruce W. Remick

"Conservation tillage: Any tillage sequence that reduces loss of soil or water relative to conservation tillage; often a form of non-inversion tillage that retains protective amounts of crop residue mulch on the soil surface" USDA

American farmers are converting to conservation tillage at an increasing rate. According to U.S. Department of Agriculture statistics summarized in Table 1, crop land farmed under all types of conservation tillage increased by 81.8 million acres or 186% from 1973 to 1983. During this same period, acreage under conventional tillage, historically the dominant form of tillage used by U.S. farmers, decreased by 7.4 million acres or about 4%. In 1973, conservation tillage was the tillage method of choice on only about 18% of acreage under cultivation in the United States. By 1983, that figure had increased to 40%.

This trend is expected to continue. Peter C. Myers, chief of the U.S. Soil Conservation Service, USDA, projects that, within 25 years, 90% of all tilled cropland in the United States will be farmed under some form of conservation tillage. If Dr. Myers' projection materializes as expected, it will have a major impact on future aglime usage.

Table 1

U.S. Crop Acreage Under Conventional and Conservation Tillage

Type of tillage	1973	1981	1982	1983	Increase (Decrease) 1973—1983 Acres	Percent
Conventional tillage	203.6	205.7	204.2	196.2	(7.4)	(3.6)
Conservation tillage						
Minimum tillage	39.1	88.0	100.3	112.8	73.7	187.2
No-Till	4.9	8.7	11.5	13.0	8.1	165.3
Total conserv. tillage	44.0	96.7	111.8	125.8	81.8	185.9

All conservation tillage systems are designed to reduce the number and frequency of tillage operations performed when preparing a field for planting. The concept of conservation tillage implies the elimination of primary tillage operations (plowing and discing) from the tillage sequence. Also, an identifying feature of no-till planting is that all pre-plant tillage operations are eliminated from the operation. A characteristic common to all conservation tillage systems, therefore, is that the soil is typically worked or disturbed to a shallower depth, usually to no more than 2-4 in., as compared with conventional tillage where the soil is worked to a depth of 8-10 in. or more.

This encourages the accumulation of fertilizer, herbicide, and crop residues in the surface layers of soil—a situation that causes the development of strongly acid conditions in the soil zone where the crop will be planted. For example, in field trials in Pennsylvania and Kentucky, it has been shown that application of nitrogen under no-till conditions can cause reductions of up to two full pH units in surface soil pH depending on the type of nitrogen material used and rate of application (see Tables 2 and 3).

Similar trials in Maryland have demonstrated that, under no-till conditions, the applications of 160 lbs. of actual nitrogen per acre applied to corn can cause reductions of 1.5 pH units at the soil surface within a matter of several weeks.

Table 2

Soil pH of surface inch produced by various nitrogen materials after 5 years. N applied at 180 lbs. N/Acre/Year—Pennsylvania.

N Source and Soil pH				
Control	UREA	28% N Soln	Am. Nitrate	Am. Sulfate
6.7	5.9	5.8	5.5	4.7

Table 3

Effect of 5 years of continuous corn under no-till conditions on surface soil pH (0-2") at different N rates—Kentucky.

Starting pH	No N	75 Lbs. N/Acre/Yr	150 Lbs. N/Acre/Yr
5.3	5.2	4.8	4.6

Table 4

Effect of lime treatment on soil pH after 5 years of no-till continuous corn. Starting pH. 5.7—Kentucky.

Lime rate Tons/Acre	Final* pH	Corn yield Bus/Acre
0	4.6	101
1.5	5.5	111
4.5	6.4	119

Note: 4.5 tons/acre aglime raised pH to 6.4 and yield by 18 bus./acre after 5 years continuous no-till corn.

Soil acidity increases of this magnitude contribute to a number of factors that limit crop yields and cause significant income losses to the farmer:

- Reduced availability of many essential nutrients required by crops for growth to harvestable maturity
- Increased solubility of certain micronutrients and aluminum to soil levels toxic to crops
- Reduced activity of beneficial soil microorganisms and increased activity of disease producing ones that thrive under acid soil conditions
- Significant yield losses due to heavy weed infestations at harvest time, the result of poor herbicide performance under acid soil conditions, that prevent the efficient operation of harvest equipment.

These problems are associated with soil acidity generally. They are accentuated on soils farmed using conservation tillage practices. A well planned and executed liming program is the most effective means available to the farmer for controlling or eliminating them (Table 4). Some farmers, practicing conventional tillage, may tend to "hedge" on liming their soils. If a farmer does this while implementing a conservation tillage program, he risks significant loss of crop production, possible crop failure, and loss of income.

Accordingly, aglime use can be expected to increase as more farmers convert to conservation tillage. Not only will they find it *necessary* to lime their conservation tillage acreage; they may have to apply it at more frequent intervals, in many cases on an annual basis, as compared with the normal 2-3 year intervals associated with conventional tillage. The net effect will be an increase in aglime demand and usage over the long term.

Maryland, a major conservation tillage state, is a case in point. Since the early 1970s, when Maryland farmers began using conservation tillage techniques, aglime usage in that state has nearly doubled, from approximately 226,000 tons in 1972 to more than 425,000 tons in 1983. University of Maryland agronomists attribute this phenomenon largely to the increased use of no-till and other conservation tillage practices.

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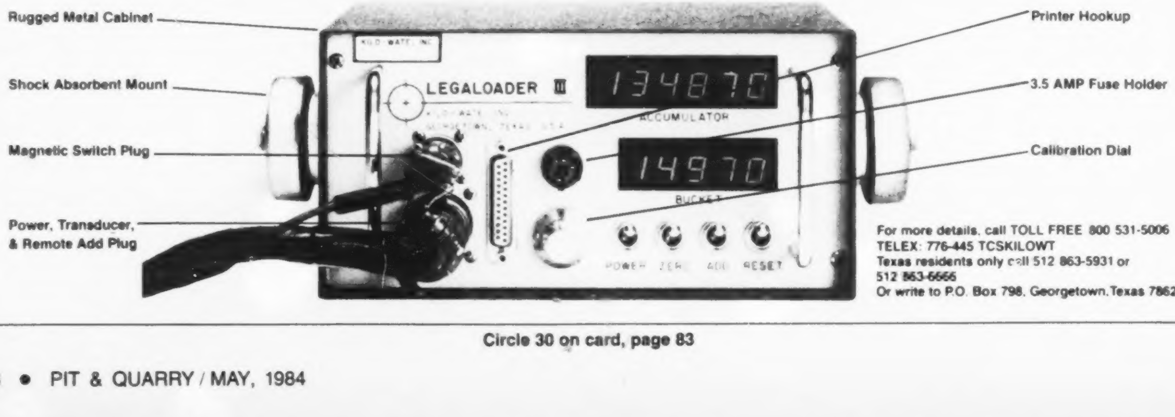

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This is especially significant in light of the fact that Agriculture Conservation Program (ACP) cost sharing incentives to farmers for using aglime on cropland were discontinued in 1972. It is reasonable to expect that aglime usage and sales in other areas where conservation tillage is gaining acceptance will be similarly affected.

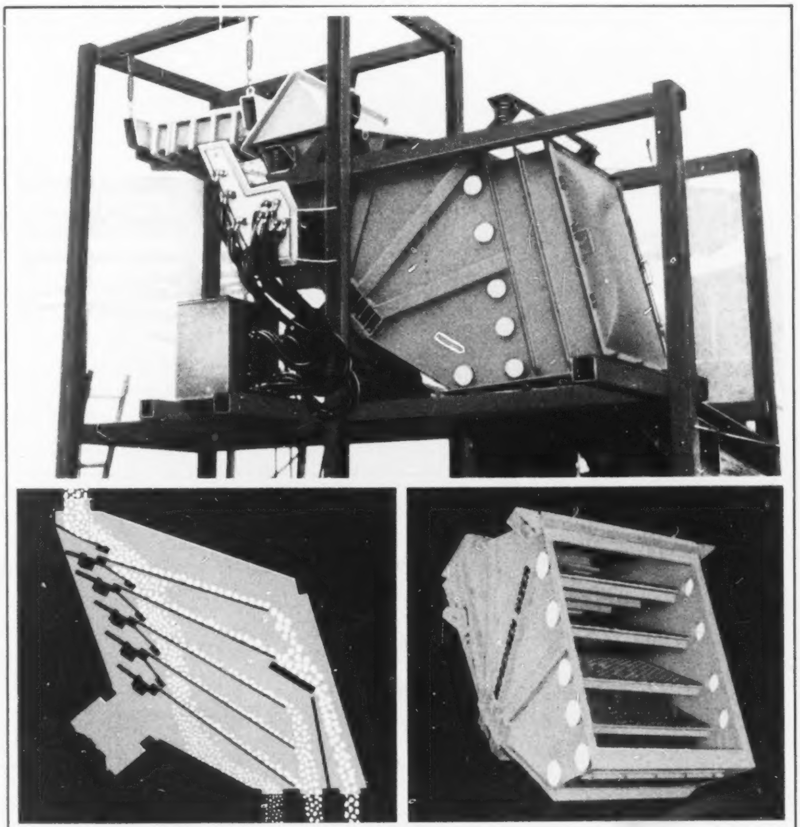
Conservation tillage, because of its role in soil and water conservation on agricultural land, is a major aspect of the broader issue of natural resource conservation in the United States. In recognition of its importance, Secretary of Agriculture John R. Block, at his news conference on December 8, 1983, announced that he will convene a national conference to address the subject of conservation tillage. Entitled "Conservation Tillage: Strategies for the Future," this conference will feature 45 speakers who will address all aspects of this expanding system of crop land management. It will be held October 3-5 at the Opryland Hotel in Nashville, Tenn. Secretary Block will open the conference with a keynote address at a luncheon on Wednesday, October 3. Adjournment will be at noon Friday, October 5.

The general sessions on Wednesday afternoon will deal with the concept of conservation tillage, its advantages to the farmer, the broader public interest in the practice, and the future meaning of conservation tillage for farmers, science, and the agribusiness industries (including aglime producers). Smaller concurrent sessions throughout the second day and during the next morning will allow all participants to learn the latest information on production technology, ecological effects, education and information strategies, economic impacts, and public policy relating to conservation tillage. A final session will bring all participants together for a summary of questions, facts, insights, and an outlook on each of the discussion areas. Participation in the conference will be opened to 1,000 representatives of the agribusiness industry, the scientific and professional sector, agricultural producers, government, public interest groups, and the agricultural media.

The National Crushed Stone Association and the National Limestone Institute were responsible for proposing this conference to the Secretary of Agriculture. Now, representing two of approximately 55 organizations that will co-sponsor the event, staff members from both associations are on working committees to plan and implement the conference.

The crushed stone industry has a big stake in this conference. Present acreage trends and technological developments relating to conservation tillage clearly indicate that it is a growing market for aglime. Soil pH management through regular aglime use is a major factor in the success of conservation tillage farming. NCSA and NLI sponsorship and involvement in planning for this conference assures that aglime will be represented as one of its major program topics. ●

Bruce Remick is director of aglime marketing for NCSA.



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ON THIS MONTH'S COVER

Workers at Southwestern Portland Cement Co's Victorville, Calif., plant perform maintenance inside a kiln. (Photo courtesy of Southdown, Inc.)

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Comparison of 1984/1983 Construction Contract Values*

	4 Mos. 1984 (000,000)	4 Mos. 1983 (000,000)	Cumulative Percent Change
Nonresidential building	$20,852.2	$18,176.8	+ 15
Residential building	31,839.6	25,827.5	+ 23
Nonbuilding construction	10,565.5	11,139.8	− 5
Total construction	$63,257.3	$55,144.1	+ 15

Dodge Index

(1977 = 100, Seasonally Adjusted)

February 1984	March 1984	April 1984
150	144	145

**Based on statistics compiled by F.W. Dodge Div., McGraw-Hill Information Systems*

should be sent to Office of Standard Reference Materials, Room B311, Chemistry Building, National Bureau of Standards, Washington, D.C. 20234.

Ideal shifting Potash Division to Canada

Ideal Basic Industries, Inc., has announced plans to transfer its Canadian potash operations to a new Canadian subsidiary, Potash Company of America, Inc. (PCA). Ideal executives also authorized the company's participation in the filing of a preliminary prospectus by PCA with the Ontario Securities Commission. The planned offering of voting convertible preferred shares to the Canadian

Forum

Dear Ms. Murphy:

On bid rigging and other bad image publicity for highway contractors, your editorial in May's *Pit & Quarry*:

If the majority of those in the industry are not offenders, then the solution is that they must blow the whistle on those who are. Saying nothing, i.e. closing ranks, is to band all as birds of a feather.

John W. Taber
Manager
Darby Spar, Ltd
Darby, Mont.

Dear Ms. Murphy:

You invited comment on your perception of the ills of the construction industry. I see them from a different perspective, probably due to longer exposure to the scene (a euphemism for greater age).

First, I think that what you observe as related to the construction industry now, also relates to all our institutionalized society. Criticism by media is rampant. The resulting loss of esteem of medical, legal, public accounting, teaching, and other professions in one part of the spectrum to labor productivity and unionism in another, affects us all, and we (as both critic and victim) are tarnished by it.

Second, our legislative bodies are so paralyzed by the same criticisms that their safest action is inaction.

Third, (and directly related to highway construction) the increasing dependence on federal money removes the direct link between need, as perceived by the user, and action, as taken by his directly elected state legislature. That probably is the biggest change of the past 30 years.

One suggestion that, if implemented, might help the industry and public alike, is consideration of total life cycle cost of construction when doing the original design and construction of the facilities. This would include the social costs (detour costs, time delays, accidents, etc.) as well as actual costs of both continuing maintenance and ultimate removal with disposal. This approach could justify a higher quality job, albeit at more cost.

One other personal pet peeve might be appropriate to share—the trend toward high fineness, high strength cements, which permits lower cement factor concrete of diminished durability, at a very high "social cost," to get a direct saving in the range of 2% of first cost.

Thanks for the invitation.

Karl Hauser, P.E.
Manager
Corporate Development
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Cement report

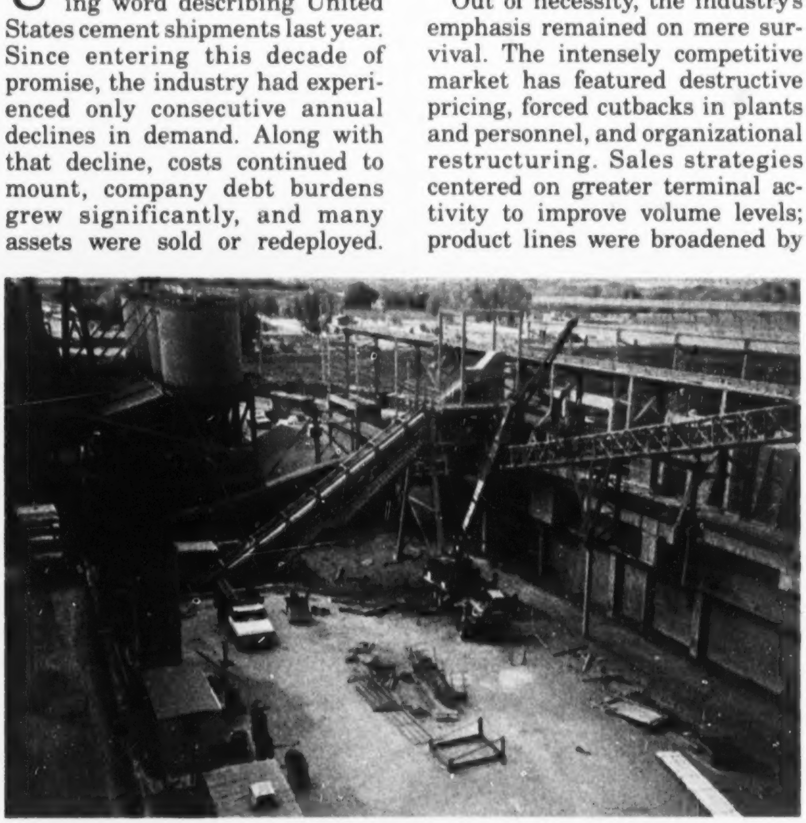
U.S. cement: recovering as a changed industry

1983's upturn gives producers shot of optimism

By Roy A. Grancher

Upturn was the most encouraging word describing United States cement shipments last year. Since entering this decade of promise, the industry had experienced only consecutive annual declines in demand. Along with that decline, costs continued to mount, company debt burdens grew significantly, and many assets were sold or redeployed. Indeed, the solid 10% tonnage gain in 1983 provided a much-needed shot of optimism in regard to the remainder of the '80s.

Out of necessity, the industry's emphasis remained on mere survival. The intensely competitive market has featured destructive pricing, forced cutbacks in plants and personnel, and organizational restructuring. Sales strategies centered on greater terminal activity to improve volume levels; product lines were broadened by blends, mixes, and types such as oil well cement.



Gifford-Hill's ongoing capital improvement program at its Oro Grande facility has included raw and finish mills, electrical power distribution, instrumentation, and controls for its five kilns. Producers are spending now in order to gain better cost control for the future.

On the other hand, indications exist that sights were being raised for more positive production results. Increasing attention is being paid to modifying existing plants, with specific process and system upgrading for more efficiency; however, the net result will be facility change that is not likely to generate much additional capacity. This situation lends support to the expectation that sustained recovery can lead again to a national requirement outpacing available domestic output. In other words, another cement shortage later this decade.

Shipments and supply

The cement industry's gallows humor for the '80s can be detected in this line: "If the pessimists aren't happy now they never will be!" Two years ago, the market's bottom fell out when a 20-year low in shipments was recorded to go with a cement ROI of less than 1%. Last year's volume gain of more than 6 million tons, for a total of nearly 71 million tons, was a much needed morale booster.

Although the tonnage remained substantially below the 85 million level reached in both 1978 and '79 (the industry's most recent shortage experience), indications were that demand finally was going in the right direction. As Keystone Cement's annual report stated: "1983 was the turnaround year!"

The rays of cautious optimism are being reflected in other industry statements as well. While stringent cost controls remain the rule, numerous references were made to plant locations being in future growth areas, especially the Sunbelt states. Forecasters call for rising cement consumption over the next 5 years, not to the degree once anticipated for the '80s, yet substantial enough to create another imbalance in the domestic demand and supply relationship. A 90 million ton cement requirement 5 years hence can have available to service it a production capability not much higher than today's approximately 85 million tons of clinker capacity.

Cement's 3-year decline forced the shaking out of obsolete plants and inefficient kilns. Few major industry programs are committed to replacing this lost production, much less provide for additional demand. With many producers posting losses or severe drops in net income and a market price structure best described as depressed, both the motivation and resources are lacking for making large capital expenditures.

Only one major plant project is scheduled for completion in 1984, Southwestern Portland Cement's $100 million modernization and expansion of its Victorville, Calif., operation. The net result will be a 300,000 ton gain in capacity.

Three other announced capacity expansion programs—in California by Gifford-Hill & Co. and Monolith Portland Cement, and in Arizona by California Portland Cement—have been delayed or placed on hold. Of the five totally new plant start-ups announced in the past few years, only Florida Crushed Stone's 600,000-ton Brooksville operation appears to be progressing. The others remain in a holding pattern generally seeking financial help and economic recovery for justification.

Distribution terminal activity has increased as producers attempt to generate more tonnage by extending the marketing reach of existing plants. Pictured here is Ideal Basic Industries' Salina, Utah, cement terminal completed a year ago.

Yet the fact remains that producers must spend money in order to control and reduce costs. The trend in U.S. plant program priorities is selective and specific spending in each phase of production and material handling. This means company investment that can be justified by direct per ton savings today rather than in the future.

With the predicted gap between supply and demand acting as a carrot on a stick for producers and despite the limited present returns, cement supply in the future is a concern, an opportunity, and a basis for change for producers. Basic company positioning and product approaches as to where their individual industry participation lies is the fundamental business decision both domestically and abroad.

An aging industry

The U.S. cement industry is showing its age despite impressive progress made since the oil embargo 10 years ago. Fig. 1 depicts the bell-shaped curve of year and type of that year's kilns. The hump of its units is between 20 and 33 years ago; the obvious implication is in support of the further plant investment necessary to improve productivity.

More definitive of this is the changed ranking that has taken place in just the past 5 years among the top baker's dozen cement companies (Fig. 2). There has been a dramatic repositioning and a revealing comparison is provided by examining each firm's plants by process.

Lone Star Industries remains the highest ranking cement company, its capacity significantly larger through its $267 million acquisition of Marquette. Ideal Basic Industries has fallen victim to outstanding debt, incurred mostly through the $330 million-plus construction of its new 1.5 million-ton Alabama facility. Company efforts to convert several operating assets to cash have included plant and distribution terminal sales.

Now in second place is General/Lafarge, whose business plan defines the challenges faced by the cement industry. The plan combines "aggressive marketing in growth areas, efficient production through process improvements, and alert attention to cost and expense control." Note that the three largest firms have a total of 17 dry process plants, but also have 20 wet process installations. This latter group represents upwards to one-third of the remaining wet plants in the industry.

Martin Marietta, the fifth-ranked producer in 1979, has disappeared entirely from industry listings by closing or selling all its plants. The company's annual report stated that when it became apparent the organization needed to sell assets to reduce debt "the cement company was identified among the assets that probably were salable."

Recently three companies have moved significantly in the U.S. cement market—Ash Grove, Southwestern, and Moore McCormack. Ash Grove, once the industry's 18th-ranked company, acquired 22nd-ranked Oregon Portland and bought Lone Star's wet process Seattle plant to develop into a strong Northwest marketer. Southwestern obtained 1 million tons of additional capacity early this year by acquiring the Colorado facility of Martin Marietta. Southwestern also signed a 5-year lease with an option to buy Marietta's Utah operation.

Moore McCormack doubled capacity of its Florida plant in 1982, then in a $50 million purchase bought the dry process Knoxville, Tenn., operation from Ideal Basic, along with distribution terminals in North Carolina and Tennessee. The company shows its faith in the country's effort to rebuild its infrastructure through its advertising slogan, "America is about to invest in cement. Moore McCormack is ready!"

Elsewhere, Louisville Cement closed and then sold one of its three plants (representing more than ¼ of its capacity), to make an unsuccessful bid for a Kentucky pottery clay maker. Giant Cement's long time family control passed on to two private investment groups. Three top producers—Lone Star, Ideal Basic, and Kaiser Cement—announced decentralizations. At least 10 cement entities changed presidents, a sure sign of industry revision. Yet Centex stated that it contin-

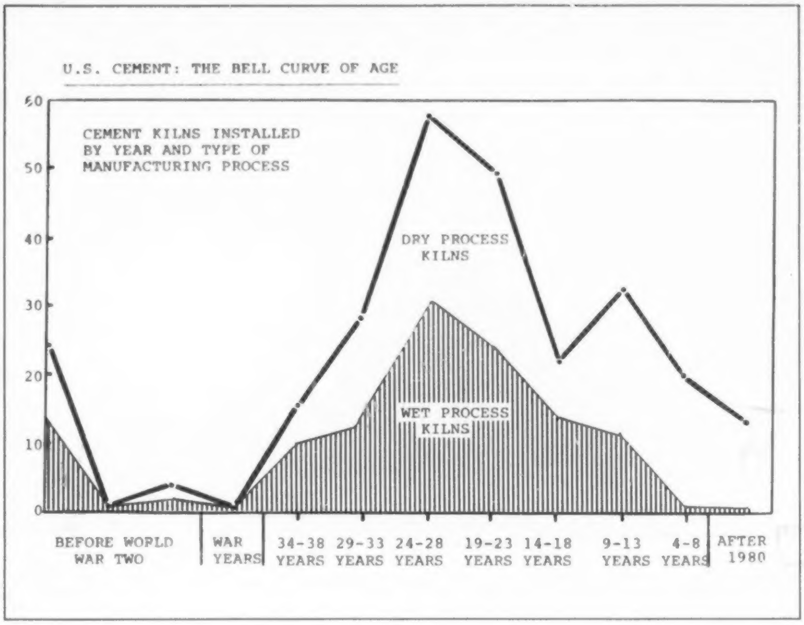


Fig. 1

ued to be among the most profitable companies in the industry because of its continuity of management!

The battlefield—price

The first line of cement's competitiveness (and profit) is pricing, and there has been general industry agreement that product was being sold in a most disastrous manner. Adjectives used in describing the price environment ranged from soft, under substantial pressure, and deteriorated to fierce and at inordinately low levels. Obviously this precluded any chance of being able to pass along increased costs to the consumer.

The best quote in regards to pricing appeared in Northwestern States' annual report: "If the events of 1983 prove nothing else, they have demonstrated beyond any doubt that the cement industry is totally incapable of intelligently pricing its products in a declining market. The demand for cement is virtually inelastic, and price will not in and of itself expand or diminish the amount consumed in the market place. It can and does redistribute market share, but at a cost so exorbinant that it is incomprehensible by any semblance of rational or sound business practices."

Competition also made some companies expand the distribution reach of existing production units in the hope that tonnage generated could compensate for lower pricing.

Lafarge bought terminals in New Orleans, La., and Oswego, N.Y., opened one in Corpus Christi, Tex., and currently is completing two others, in Columbus, Ohio, and Buffalo, N.Y. South Dakota Cement opened terminals in Casper, Wyo., and Denver, Colo. Gifford-Hill expanded its storage capacity in Phoenix, Ariz., fivefold. Many other companies made similar moves.

Product line diversification received attention. Oil well cement had been added at the Southern Division of Martin Marietta before Blue Circle's bought it. The South Dakota cement plant also added production of oil well cement, as did Gifford-Hill at its Midlothian, Tex., plant. Louisville Cement introduced Brixment, a masonry cement, to its Logansport, Ind., output. Arkansas Cement acquired the product Quikcrete, a do-it-yourself concrete mix, as well as adding oil well cement to its product line.

Imports and foreign involvement

As to be expected during depressed economic periods, domestic efforts against cement imports accelerated. Charges of dumping, a call for duties, and American protectionism all were brought to bear against overseas volume. But the result for 1983 may be indicative of what lies ahead. Imports rose to more than 4 million tons, up by 40% over the 12-year low that had been reported just the previous year.

Kaiser Cement in particular, supported by several other West Coast producers and industry unions, led vigorous campaigns against Australian and Japanese tonnages. They claimed the product was being dumped into the U.S. at less than fair value. Charges also were introduced against Mexican shipments to impose countervailing duties due to their governmental fuel subsidies. Investigations also followed alleged dumped Korean cement shipments that arrived in California and were purchased in Hawaii.

To the north, a different anti-import scenario developed. The Gas-Tax Act of 1982, which strengthened "Buy America" laws, had been extended to require that 100% U.S.-made cement be used in federally-funded projects. Canadian producers, who have built modern plants along the border to service American consumption, faced preclusion from participation in U.S. demand.

The net result of these actions has been an International Trade Commission ruling that the industry is not being injured by Far East imports, and an act of Congress exempting cement from the restrictions applied by the Surface Transportation Assistance Act.

Canada remained last year's prime exporter with just more than half the total; following were Mexico, Spain, France, and Colombia. Where once Detroit, Los Angeles, and Seattle were top import destinations, the present rankings have Buffalo, St. Albans, Tampa, and Miami at the top.

With minimal industry capacity addition but forecasted increasing cement demand, the resulting supply gap again can be filled by imports. This view is supported by Lone Star's realistic approach. Last year, the company acquired a 50% interest in Pacific Coast Cement's Long Beach import terminal that can move 600,000 tpy.

U.S. CEMENT: FIVE YEARS OF THE TOP BAKER'S DOZEN COMPANIES, AND THEIR PLANTS

	Cement Plants			Cement Plants	
1979 Ranking*	**Wet**	**Dry**	**Present Ranking****	**Wet**	**Dry**
1. Lone Star	7	4	1. Lone Star	7	10
2. Ideal Basic	10	3	2. General/Lafarge	6	4
3. Gifford-Hill	5	2	3. Ideal Basic	7	3
4. General Portland	7	1	4. Gifford-Hill	2	4
5. Martin Marietta	3	5	5. Lehigh/Heidelberg	1	7
6. Medusa	1	4	6. Kaiser Cement	2	3
7. Marquette	6	4	7. Southwestern	2	5
8. Universal Atlas	2	5	8. Dundee/Holderbank	3	—
9. Kaiser Cement	4	1	9. California Portld.	—	3
10. National Gypsum	—	2	10. National Gypsum	—	2
11. Dundee/Holderbank	3	—	11. Medusa	—	3
12. Lehigh Portland	—	5	12. Ash Grove-Oregon	4	2
13. California Portld.	—	3	13. Moore McCormack	—	4

**Gifford-Hill* had bought Amcord.
Heidelberg bought No. 12 ranked Lehigh and its five dry plants, then acquired Universal Atlas in 1980.
Lafarge purchased General in 1981.
Lone Star acquired Marquette in 1982.
National Gypsum had agreed to sell its cement division to General Dynamics for $100 million. However the deal did not go through, and early in 1982 the company announced its decision to continue in the cement business.
Dundee does not include Independent Cement/St. Lawrence/Holderbank.

***Lone Star* agreed to sell Seattle to Ash Grove and Catskill to Independent.
Ideal closed its North Carolina plant, sold its Tennessee plant, and is under a sale-lease arrangement in New Mexico.
Gifford-Hill Detroit is held for sale.
Southwestern bought Martin Marietta's Colorado plant and is leasing with option to purchase the Utah plant.
Martin Marietta sold three plants to Blue Circle and one to Cementia Holdings in 1983. All others have been sold or closed.
Ash Grove merged with Oregon Portland, then bought Lone Star's Seattle plant.
Moore McCormack closed two wet plants in Tennessee, then bought Ideal's dry process Tennessee plant.

Fig. 2

With a strategy defined as controlling imports rather than being victimized by them, more Lone Star moves can be expected.

Another facet of this renewed import interest is Blue Circle's action in Arizona. The British group bought three large ready mixed concrete companies in that state; reportedly, the cement for these operations will be shipped from Blue Circle's new 1 million ton Hermosillo plant in Tolteca, Mexico, 240 miles from Tucson. This is the same supply source for the San Diego import terminal that Blue Circle acquired from Melwire in 1983 in their development of a Southwest pincer strategy.

Other actions in U.S. cement's internationalization included:

- Blue Circle and Cementia Holdings of Switzerland acquired the Alabama, Georgia, Iowa, and Oklahoma cement plants of Martin Marietta for $170 million.
- St. Mary's bought two Wisconsin terminals from Lehigh.
- Independent Cement acquired the Massachusetts terminal of Martin Marietta, then agreed to buy Lone Star's Catskill, N.Y. plant and associated terminal facilities.
- In Florida, Ideal Basic's Palm Beach terminal was purchased by Mexican interests, creating a new company, Eagle Cement.
- Saudi Arabian interests continued construction of a 600,000-tpy Houston importing terminal called Falcon Cement.
- Norcem sold half of its New York City cement terminal to Spain's Cia. Valenciana.

The most interesting acquisition of the year, however, may have been by the 2,000-plus members of the Passamaquoddy Tribe of Maine, who now are majority owners of Martin Marietta's 400,000-tpy cement facility in Thomaston.

Problems for producers

Recession choked off major industry spending for new and more efficient plant capacities. Yet the recognition exists as to the importance of improved production cost structures, and this is where most ongoing expenditure is being directed.

The power of positive thought is appearing in many company statements and published reports. Recognition is growing that, without a strong stand in regard to pricing its product, improved profit margins cannot be achieved. Yet specific clouds do appear above cement production. One is legal, the second an apparent loss of memory and perspective.

An unfortunate and costly legacy confronting the industry is antitrust class action litigation dating back to the 1970s. Charges of price fixing were made against the Portland Cement Association and 50 cement companies. Hopefully this unpleasant Sword of Damocles hanging over U.S. cement will be banished this year; depostion taking now is reaching the hearing stage before a Los Angeles judge.

The second cloud concerns absolving management of any responsibility for the industry's unhappy past. Several statements have been made saying, in effect, that cement executives overexpanded the industry in a euphoria of unlimited growth, that blame is not theirs because everyone was doing it, and that it isn't fair to be critical in retrospect.

The commentaries are disturbing by their very appearance. To believe that leadership runs after euphoria or any other pipe dream is misconception of what effective management comprises. To justify lemming-like instinct is inexcusable. Hindsight often can find value in explaining mistakes that foresight should have avoided. In making the industry's decisions, the choice was between the executive or the pressure, and in cement's past the latter won.

We cannot back into tomorrow. With cyclical recovery underway, differing strategies are being initiated as to market share, distribution reach, product line, volume, and the price for obtaining each. The saying goes that experience enables us to recognize a mistake when we make it again; for the cement industry's best interests, an instant replay of yesterday's cement experience is a prospect to be avoided. ●

Roy A. Grancher is a long time participant and observer of the portland cement industry.

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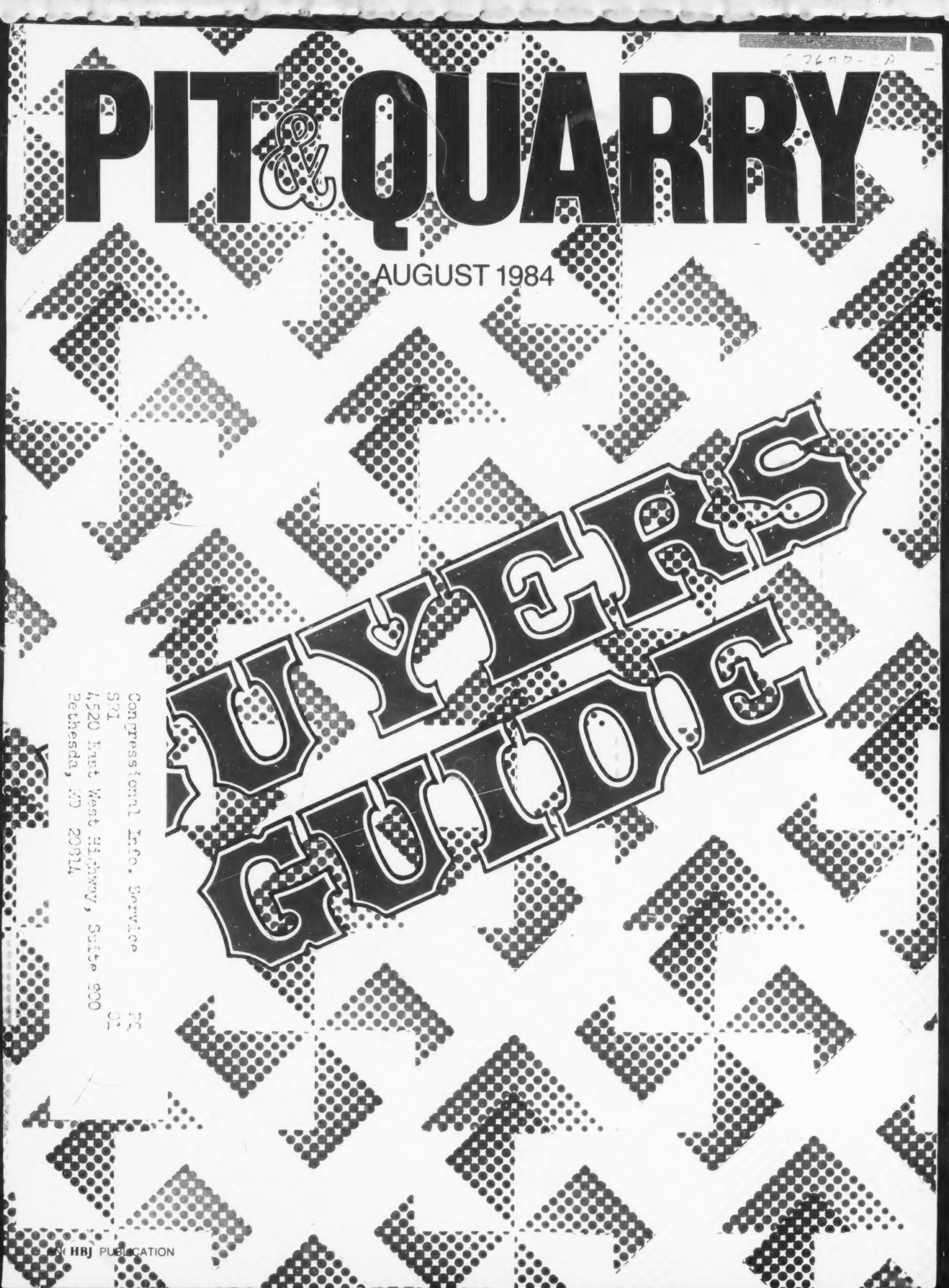
PIT & QUARRY

AUGUST 1984



BUYERS GUIDE

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ON THIS MONTH'S COVER

Notice of our first Buyers' Guide stands against rock in its most elemental form and color. Original design by Janet Wilcox.

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hours in 1983 without a single injury was the Kingston Quarry, Trap Rock Industries, Inc., Kingston, N.J., 363,293.

Runners-up in various mining categories also worked without injury during 1983, but accumulated fewer employee-hours than the winners. Also deserving recognition for their excellent safety records are the following mines and quarries:

Underground nonmetal—Shoals Mine, U.S. Gypsum Co. (Ind.); Sperry Mine, U.S. Gypsum Co. (Iowa); Boonesboro Quarry, Boonesboro Quarry, Inc. (Ky.); and Blue Rapids Mine, Georgia Pacific Corp. (Kan.)

Quarries—Lonestar Florida Pennsuco Aggregates (Fla.); Stoneport Quarry, Presque Isle Corp. (Mich.); Jamesville Quarry, Allied Chemical Co. (N.Y.); and, Midlothian Quarry, Texas Industries, Inc., (Tex.)

Curl elected president of Oregon con/agg group

Jim Curl, Bend Aggregate and Paving Co., Bend, was elected president of the Oregon Concrete and Aggregate Producers Association at its 17th annual meeting last June. Curl succeeds Scott Parker, Scappoose Sand and Gravel Co., Scappoose.

Kip Johnson, Johnson Rock Products, North Bend, was elected vice president, and Harold Pippin, Valley Concrete and Gravel Co., Independence, was elected secretary-treasurer of the association.

Members of the organization's board of directors are: Jeff Sercombe, Bill Abbott, George Layng, Vern Egge, Steve Van Doren, Bob Vaughn, Tom Fox, and Mike Allen.

CQMA Safety Section announces program

The cement, quarry, and mineral aggregates section of the National Safety Council's Industrial Division will hold sessions on 3 days of the upcoming NSC Congress, October 15-18, in Chicago. The sessions will be held Monday, Tuesday, and Wednesday at the Conrad Hilton Hotel. Topics to be discussed include measurement of safety performance, center safety beam technology, and ergonomics.

For more information, contact Congress Planning, NSC, 444 N. Michigan Ave., Chicago, Ill. 60611.

Comparison of 1984/1983 Construction Contract Values*

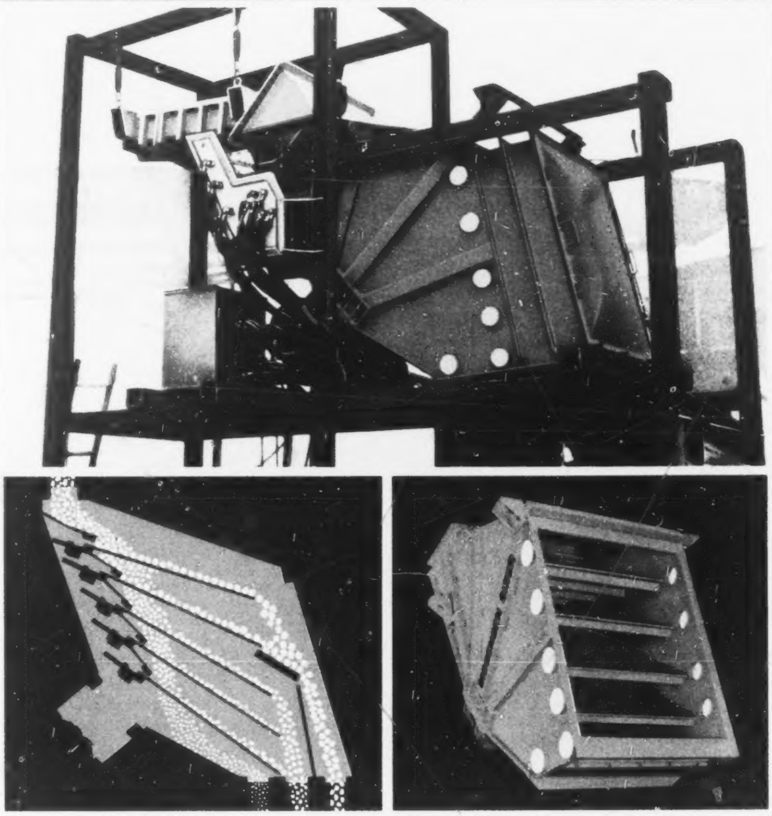
	5 Mos. 1984 (000,000)	5 Mos. 1983 (000,000)	Cumulative Percent Change
Nonresidential building	$28,108.4	$23,368.9	+20
Residential building	42,644.1	34,434.0	+24
Nonbuilding construction	14,477.6	16,551.3	−13
Total construction	$85,230.1	$74,354.2	+15

Dodge Index

(1977 = 100, Seasonally Adjusted)

March 1984 .... 144 April 1984 .... 145 May 1984 165

**Based on statistics compiled by F.W. Dodge Div., McGraw-Hill Information Systems*



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Safety awards feature of NSA operators' meeting

***Pit & Quarry* Class A and Class B Safety honors were presented by David Meyers, (left) NSA Safety Chairman and safety director, Vulcan Materials Co., to Joe Rebeck, operations manager, Standard Slag Co., for their Mingo Junction and McDonald plants.**

Wendell Pierce (right), operations manager, International Mill Service, received NSA awards for having 22 locations with no lost-time injuries.

During the annual operators' meeting of the National Slag Association, outstanding safety performances of slag industry operations were recognized.

A total of 60 processing plants operated throughout 1983 without a lost-time injury, and the total frequency rate for all slag plants reporting to NSA was down from 5.2 in 1982 to 3.6 in '83.

Pit & Quarry magazine provided awards for those plants that worked the longest periods with no lost-time injuries in three categories: Class A—50,00 or more hours; Class B—less than 50,000 hours but more than 15,000; and Class C—15,000 hours or less.

The winner in Class A was the Mingo Junction plant of Standard Slag Co., Youngstown, Ohio, which has worked 821,777 manhours (10 years) without a disabling injury. Class B honors also went to Standard Slag for their McDonald plant, which has worked 467,647 manhours (16 years) without a lost-time injury being recorded. Joe Rebeck, general operations manager, accepted both awards for Standard Slag.

Class C recognition went to Heckett Company, Butler, Pa. Their Bethlehem, Pa., plant has worked 175,242 manhours (12 years) without a lost-time injury. Bob Carson, operations manager, accepted the award.

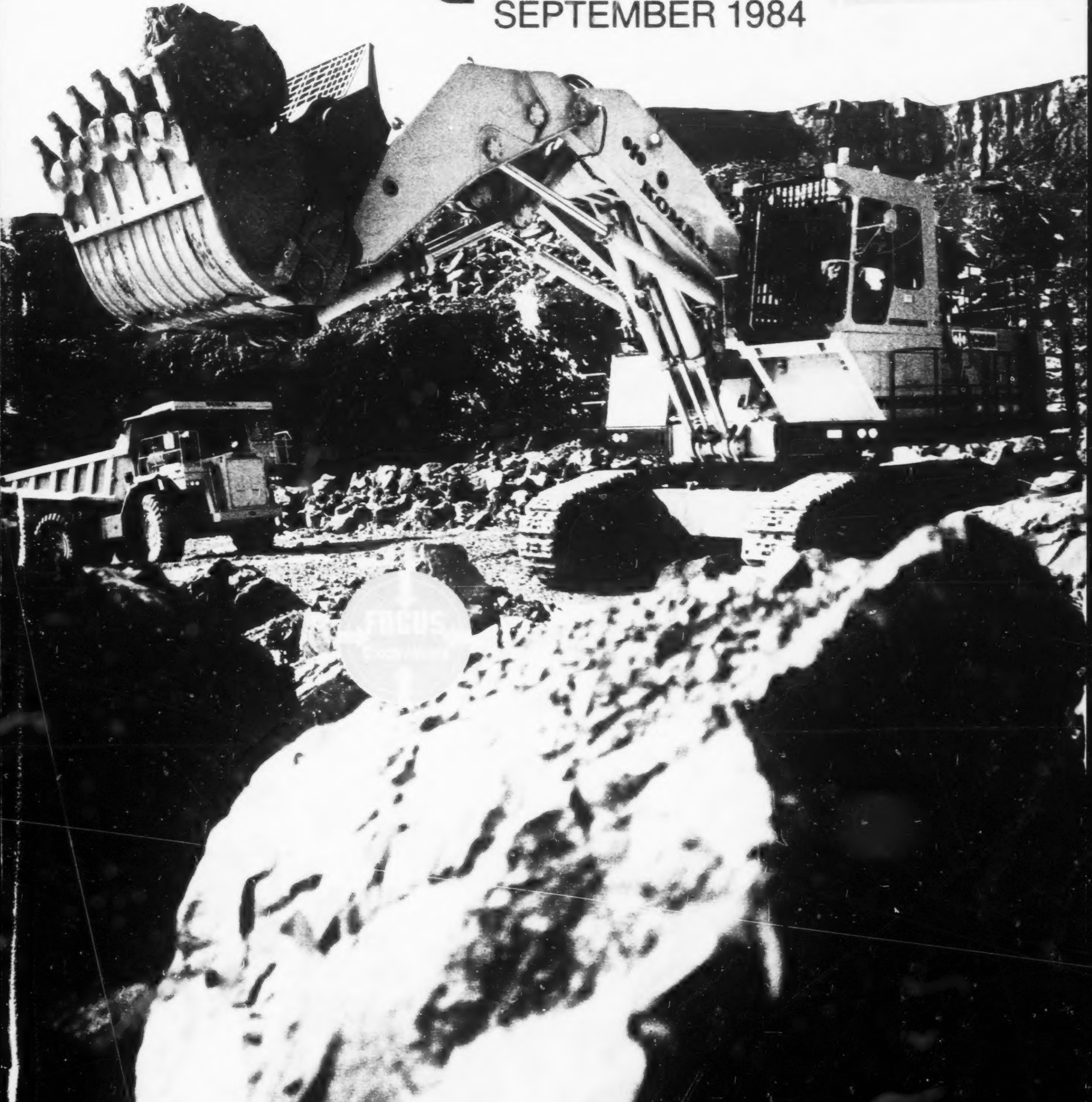
The National Slag Association awarded plaques to those plants recording the first full year without lost-time injury. Plants going injury-free longer than 1 year received engraved bars to be placed on previously awarded plaques.

The number of plants, by company, receiving NSA awards are listed below:

Companies	Plants
American Materials	1
Duquensue Slag	6
Heckett Company	17
Inter Mill Service	22
E. C. Levy Company	3
Maryland Slag Co.	1
McGraw	1
Sheridan Corporation	1
Standard Slag	5
Vulcan Materials Co.—Southern Div.	2
Vulcan Materials Co.—Midwest Div.	1 ●

PIT & QUARRY

SEPTEMBER 1984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October's issue features various maintenance factors

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One of the new types of front shovel, equipped with the latest in automatic controls. (Photo courtesy of Komatsu)

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responsibilities for Limestone Products' parent company, Penn Virginia Corp.

In this position, Viall will direct manufacturing, processing, and sales operations for a number of mineral products; previously, he was president of the corporation's Cleveland materials company.

Cement firms report second quarter results

Lone Star Industries, Inc., reported a net income of $11.7 million in the second quarter compared to a net loss in the second quarter of 1983 of $2.4 million. The sale of the company's cement plant in Catskill, N.Y., added importantly to these results.

Net sales for the second period were $280 million compared with $242.5 million for last year, an increase of 15.4%.

In response to the improvement over last year, James E. Stewart, Lone Star chairman and chief executive officer, said, "The recovery in our business has become more evident as we move into the peak construction months. The strong volume increases for cement and our other construction products, as well as the continuing improvement in prices, indicate that the business environment is good and our strategy is working."

Business activity was particularly strong in the second quarter and both sales and earnings were sharply ahead of the same period last year, according to J.D. Fowler, president and chief executive officer of Lake Ontario Cement Ltd. However, the price war in the metropolitan Toronto ready mixed concrete market, and climbing interest rates could continue to influence negatively profit gains forecast earlier in the year.

Consolidated sales for the quarter ending June 30 were $39.1 million, up 28% from 1983's showing of $30.5 million. Net earnings were $1.6 million, compared to $1.1 million for the same period last year.

"In the long term, we are still optimistic with regards to economic recovery," Fowler said, "but we are becoming increasingly concerned about climbing interest rates. Construction activity has proved to be particularly sensitive to such moves, and further increases will no doubt lead to a decrease in the demand for our products."

Comparison of 1984/1983 Construction Contract Values*

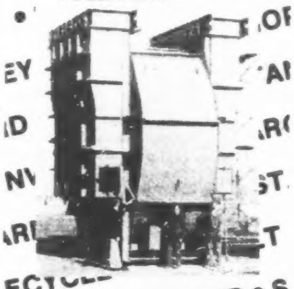
	6 Mos. 1984 (000,000)	6 Mos. 1983 (000,000)	Cumulative Percent Change
Nonresidential building	$34,855.3	$29,695.6	+17
Residential building	52,817.6	44,662.6	+18
Nonbuilding construction	17,867.5	20,248.1	−12
Total construction	$105,540.4	$94,606.3	+12

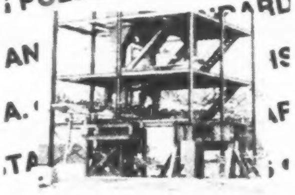
Dodge Index

(1977 = 100, Seasonally Adjusted)

April 1984 .... 145 May 1984 .... 165 June 1984 148

**Based on statistics compiled by F.W. Dodge Div., McGraw-Hill Information Systems*





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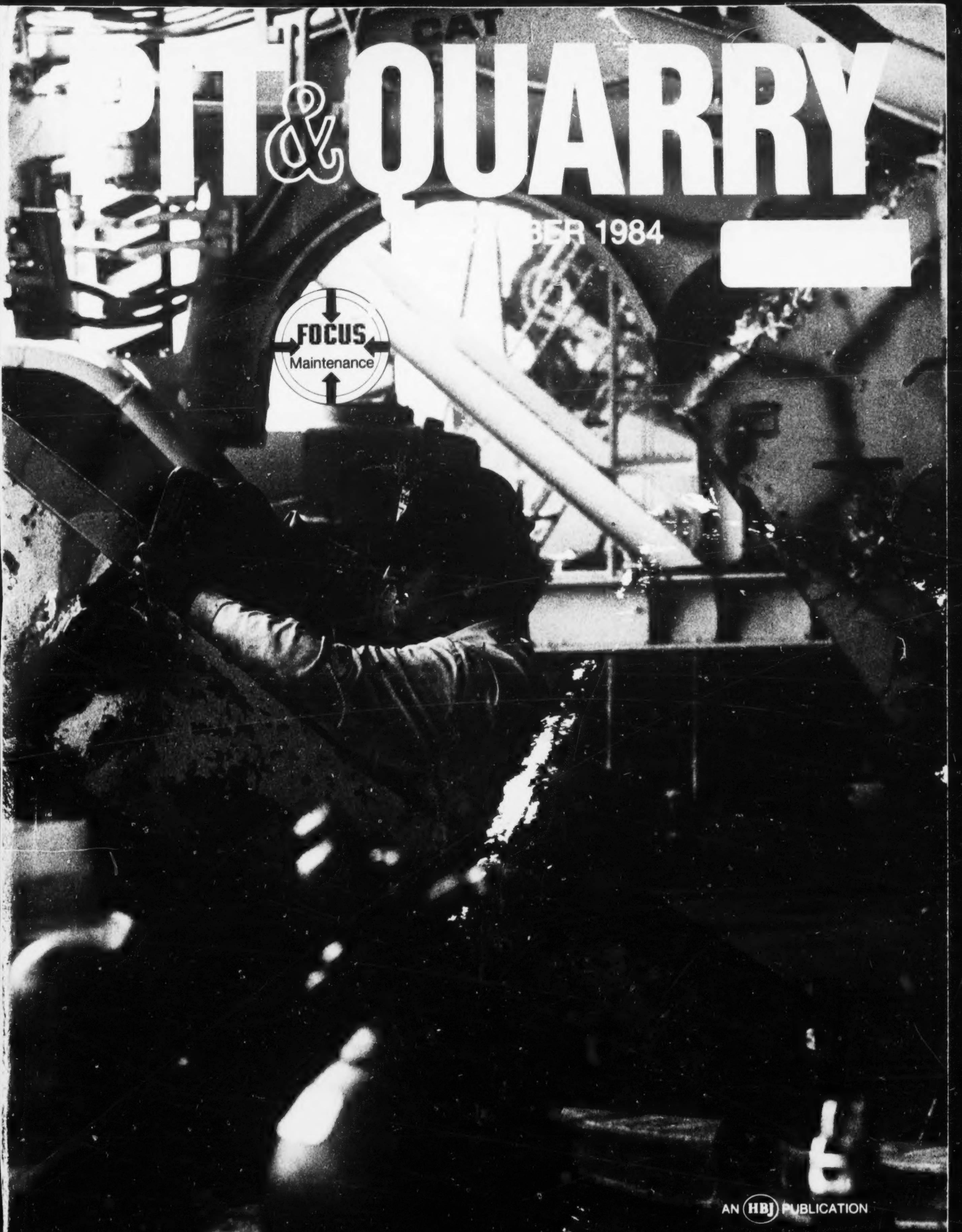

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son of the U. K. They will discuss the practical aspects of achieving successful flow in bunkers, hoppers, and silos, and the storage and reclamation of dry chemicals. Seminar attendees will each receive individual attention to their specific problems.

Cost of the seminar is $200 for IFAA members and $300 for nonmembers. Further information can be obtained from IFAA, 111 E. Wacker Dr., Chicago, Ill. 60601.

PLA revises test methods manual

The Pulverized Limestone Association has published a revised edition of its PLA Test Methods Manual. The manual details testing methods and standardization information for producers and users of finely ground limestone.

PLA membership represents many pulverized limestone producers in the U.S. and Canada; its primary objectives are the development of wider markets and improved products through research and the development of standard testing procedures. Copies of the manual are available from PLA members, some of which are: Franklin Limestone Co., Genstar Stone Products Co., Gold Bond Building Products, and James River Limestone Company, Inc.

Building permit values up 25% in first quarter

The value of building permits in the nation's 200 largest cities increased by 25.1% in the first quarter of 1984, compared with the value of permits in the first quarter of 1983, according to Dun & Bradstreet Corp.

Many of the largest first quarter percentage gains occurred in cities in states such as Massachusetts and Michigan that were affected severely by the recession. Among the nation's 200 largest cities, the 10 largest first quarter increases were reported in Lowell, Mass., 1,607%; Springfield, Mass., 908%; Flint, Mich., 418%; Paterson, N.J., 393%; Boston, Mass., 381%; Scottsdale, Ariz., at 354%; Lansing, Mich., at 335%; San Jose, Calif., 330%; Spokane, Wash., at 309%; and Livonia, Mich., 307%.

(Continued on page 21)

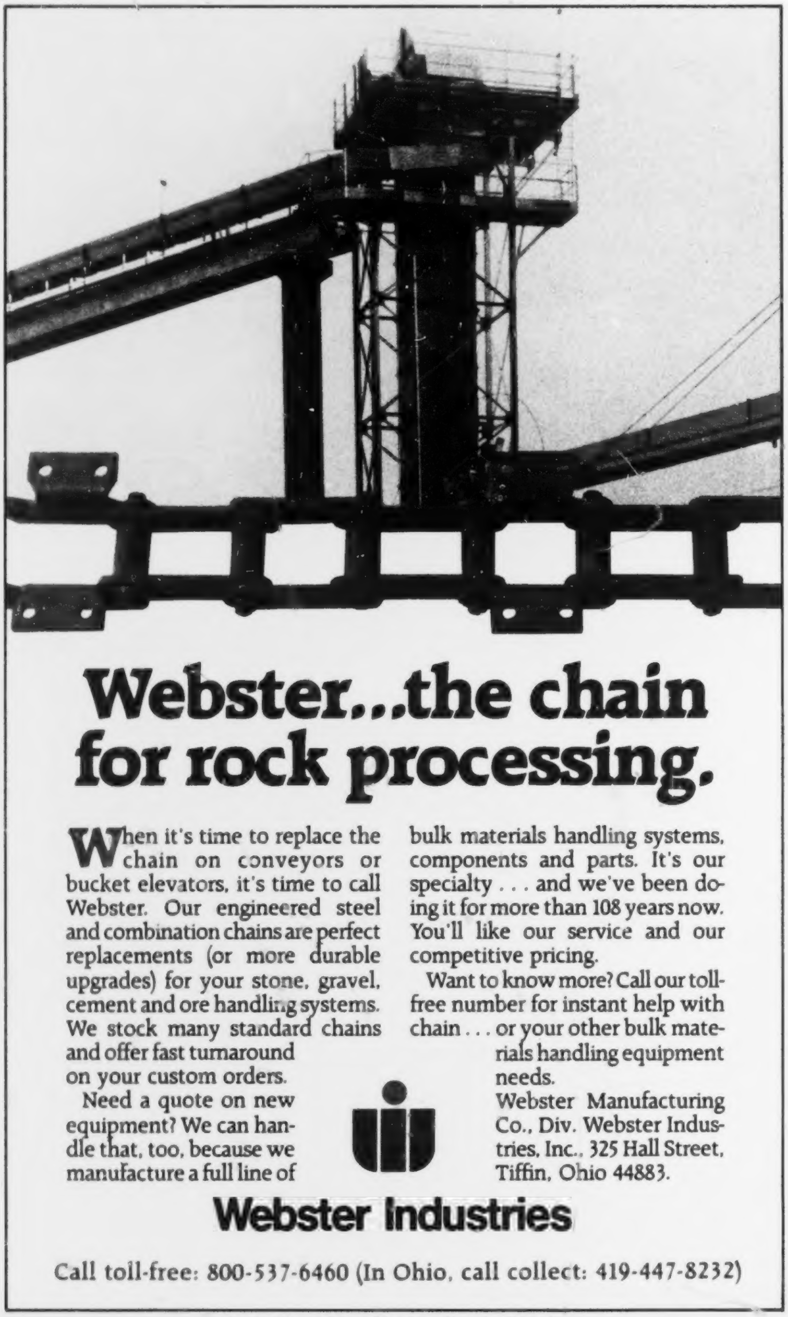
Comparison of 1984/1983 Construction Contract Values*

	7 Mos. 1984 (000,000)	7 Mos. 1983 (000,000)	Cumulative Percent Change
Nonresidential building	$ 41,709.4	$ 34.938.1	+19
Residential building	62,221.7	53,208.1	+17
Nonbuilding construction	12,386.5	23,373.9	− 9
Total construction	$125,317.6	$111,520	+12

Dodge Index
(1977 = 100, Seasonally Adjusted)

May 1984 ...... 165 June ...... 148 July 152

*Based on statistics compiled by F.W. Dodge Div., McGraw-Hill Information Systems



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